

Endoscopic Spine

Imaging and Instrumentation



Arthrex[®] 

Helping Surgeons Treat Their Patients Better[®]

Since its inception, Arthrex has been committed to one mission: Helping Surgeons Treat Their Patients Better. We are strategically focused on constant product innovation through scientific research, surgeon collaboration, and medical education to make less invasive surgical procedures simpler, safer, and more reproducible. Each year, we develop more than 1000 new innovative products and procedures to advance minimally invasive orthopedics worldwide.

Arthrex has always remained a privately held company, which allows for the rapid evaluation of new technologies and ideas, and the freedom to develop products and techniques that truly make a difference without economic considerations or compromise. Our experienced team of dedicated professionals represents a shared passion and commitment to delivering uncompromising quality to the health care providers who use our products and the millions of patients whose lives we impact.

The medical significance of our contributions serves as our primary benchmark of success and will continue into the future as the legacy of Arthrex.

Introduction to Endoscopic Approaches in Spine

As a global leader in sports medicine and surgical education, Arthrex continually strives to provide surgeons and patients with groundbreaking ultra–minimally-invasive and motion-preserving procedures.

Innovation in the medical device industry is largely driven by manufacturers. As a privately held company, we are uniquely positioned to rapidly develop new technologies and advance truly minimally invasive procedures that prioritize surgeon needs and patient outcomes.

Limited nonpermanent options for back pain mean patients must often undergo frequent treatments and invasive procedures that result in limited motion, damage to soft-tissue anatomies, and unsightly scars.

Put simply, there is a gap in today’s continuum of care between conservative treatment and maximally invasive surgical procedures.

Arthrex seeks to bridge that gap by leveraging our more than 40 years of expertise in orthopedics in the spine space, with endoscopic surgical approaches and orthobiologic innovations designed to help spare soft tissue, preserve motion, and provide the best possible outcomes for patients.

World-class medical education offerings for health care professionals and administrators help make less-invasive surgery simpler, safer, and more reproducible. Our endoscopic spine-specific surgical curriculum pathway includes individualized and expert faculty instruction and immersive, hands-on training in our dedicated spine lab as well as practice support, all designed to set surgeons and facilities up for success in endoscopic approaches to the spine.

We develop our products and procedures with an unwavering dedication to constant innovation, unmatched provider education, and world-class scientific research. Together, we can expand your treatment offerings, maximize your practice efficiency, and help make active lifestyles a reality for millions of patients.



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Synergy Integration, Imaging, and Image Management

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The Synergy Matrix system is the world's first OR integration platform capable of supporting the 4K video signal produced by the Synergy^{4D}™ camera system and distributing it to multiple displays within the OR. The next-generation platform expands on the success of the Synergy Matrix integration system with the inclusion of an integrated touch panel that provides improved system performance, reliability, and overall user experience.

Contact your local Spine representative with questions. For customized Synergy Matrix integration quotes, contact the Synergy Integration team at SynergyIntegration@arthrex.com.

Product Description	Item Number
Synergy Matrix software license	AR-3200-1052
Synergy Matrix Core software license	AR-3200-1053

Key Features and Benefits

- Newly redesigned user interface is available on a touch screen in every integrated OR
- Programmable room presets allow for quick routing and configuration of a room's audio and video sources to destinations. As an example, a room preset can be set for laparoscopic procedures so with the touch of a button, the room automatically routes the configured sources to the desired displays in the room.
- Robust room-to-room communication and source sharing give users more control over which outside rooms have viewing capabilities of their internal sources. Shared sources can be granted permission for a specific time range, or they can be removed from sharing by the source owner as needed.

- Room camera control allows users to modify the pan, tilt, and zoom settings for the room camera. In addition, room camera settings can be saved as a preset to allow for quick configuration of a room camera's position. For example, a room camera preset can set for privacy, which will automatically move the room camera's position away from the patient's location.
- Improved remote support and proactive system monitoring allow for integrated rooms to be upgraded and serviced independently.
- Equipped with the latest in 4K imaging and integration technology, the Synergy Matrix system is a state-of-the-art, video-over-IP solution that can lower the cost of ownership and positively impact OR workflow.
- Room-to-room connectivity supports sharing video and audio sources across integrated ORs, conference rooms, pathology labs, and observation rooms.
- The Synergy Matrix system provides more capabilities at a fraction of the footprint, thereby saving valuable OR space.

Synergy Matrix Core System

The Synergy Matrix Core system provides in-room 4K video and audio integration while simplifying the installation process and focusing on key functionality. The value-driven platform uses the same touch panel controller as the Synergy Matrix system but has a simplified user interface, providing both uniformity and familiarity for the OR staff while featuring intuitive and easy-to-use functionality.

The Synergy Matrix Core system uses an all-in-one switch assembly installed in each integrated room, allowing for true 4K video and audio routing without requiring cable pulls to a centralized IT closet and allowing for operation that is completely independent of the facility's network.

Synergy.net™ Data Integration Software



Synergy.net data integration software brings connectivity to your OR by integrating seamlessly with your hospital network to connect to your EHR, PACS, worklists, and surgeon preferences.

Sync surgeon and procedure settings to each OR for a consistent and reliable experience. Intraoperative media can be sent to different destinations, including your EHR, PACS, vendor neutral archive, and the SurgeonVault cloud-based surgeon communication tool.

Product Description	Item Number
Synergy.net management software	AR-3200-1030
Synergy.net HL7 software bidirectional license	AR-3200-1034
Synergy.net pairing license key	AR-3200-1067
Synergy.net printing license key	AR-3200-1043
Synergy.net reporting license key	AR-3200-1045
Synergy.net text notification license key	AR-3200-1046
Synergy.net HL7 software single license	AR-3200-1047

- Interfaces with EHRs and other HL7-based systems
- Provides a single database for all cases captured by all Synergy devices
- Improves DICOM capabilities, which includes transfer of video to a PACS
- Offers network printing from any Synergy device

Synergy SurgeonVault® Application



The Synergy SurgeonVault secure cloud-based surgical communication application provides surgeons with access to their data at any time and allows them to distribute surgical videos and stills and other selected content directly to their patients.

Key Features and Benefits

- Improved surgeon-patient communication
 - Quickly and easily choose case and library content to meet their patients' needs
 - Patients receive access to a secure, multimedia-rich patient portal rather than traditional static content
 - Improved communication to patients has the potential to improve patient satisfaction scores
- Access content from either the Synergy Surgeon App™ software or from any web browser at any time from any location
- Retrieve cases from the SurgeonVault system to their Synergy Surgeon App software even if those cases no longer exist in the application
- Latest encryption technology ensures content remains private and secure for patients and surgeons

Product Description	Item Number
SurgeonVault single-user license: monthly term	SVSIN-MTM
SurgeonVault single-user license: 1-year term	SVSIN-1YR
SurgeonVault enterprise license unlimited users: 1-year term	SVENT-1YR

Synergy 4K Imaging Platforms



The Synergy^{UHDA} imaging platform was the first endoscopic 4K camera system on the market, and the Synergy^{ID} system expands the capabilities of the Synergy^{UHDA} system by adding fluorescence imaging and additional augmented reality functionality. The 4-in-1 console revolutionizes endoscopic visualization and image management, combining the latest technology, true 4K camera heads, fluorescence imaging, LED lighting, image management, and integration with an intuitive tablet controller. One console and one unique tablet streamline the platform. Together the programmable individual surgeon/procedure preferences enhance the user experience. The 4K image displayed on the monitor has 4 times the resolution of standard HD.

LED Light Source

- Solid-state “xenon-bright” LED light source comparable to 300 W xenon light sources
- Cost-effective as bulb life is more than 30,000 hours
- Low heat generation
- Automatic brightness adjustment

Synergy Tablet Controller

Our unique and innovative tablet interface allows users to remotely and efficiently enter patient information, surgeon preferences, and image management settings once. The Synergy tablet controller may help reduce cost, shorten OR times, and increase efficiency.

Synergy 4K Consoles

Product Description	Item Number
Synergy ^{ID} 4K console (a)	AR-3200-0025
Synergy ^{UHDA} digital documentation tablet (b)	AR-3200-1021

Synergy 4K Imaging Platforms (Cont.)



The camera console comes with base software to manage 4K image and video capturing, printing, and exporting via USB. Additional software modules are offered to better address customers' individual needs. By offering software modules focused on functionality, facilities can select the features that best serve their unique needs.

Synergy Software Modules

Product Description	Item Number
Premium Bundle	AR-3200-1060
Data Management Module	AR-3200-1063
Workflow Support Module	AR-3200-1064
Clinical Enhancement Module	AR-3200-1065

Base Module Features

- Capture still images and record videos
- Print still images
- 4K image display
- Export to USB

Data Management Module Features

- Export media to DICOM or network folders
- Synergy.net™ pairing license

Workflow Support Module Features

- Network-based system allows live video streaming to any authorized remote viewer
- Export images to the Synergy Surgeon App™ software:
 - Review and edit still images and videos
 - Annotate on stills
 - Create presentations and postoperative reports for patients

- Heads-up display
- Capture images from a secondary device
- Surgical preparation checklist

Clinical Enhancement Module Features

- Augmented reality overlay to enhance spectral and textural changes in the surgical image
- Enhance or reduce the color red in live images to improve visualization of vascularization
- Consistent illumination across the entire image with highlight feature

Premium Bundle

- A comprehensive bundle that includes all Synergy software features

Synergy Accessories

Product Description	Item Number
Synergy System Integration Cable Kit	AR-3200-1040
Input/Output 1080p Video Signal Converter	AR-3210-1005
C-mount Right Angle Coupler	AR-3210-0009
C-mount HD Optical Non-Zoom Coupler	AR-3210-0012
Wireless kit, 1 TX and 1 RX	FHD-1TX-1RX
Wireless kit, 1 TX and 2 RX	FHD-1TX-2RX
DVI Input/Output Video Signal Converter	90T0009
SDI Input/Output Video Signal Converter	90T0011
VGA Input/Output Video Signal Converter	90T0013
S-video Input/Output Video Signal Converter	90T0015
Synergy Laser Light Source	AR-3200-1018

UHD 4K Monitors



- UHD 4K with medical display and 1080p HD medical display options
- Picture monitor with Synergy Matrix™ decoder
- Versatile multiformat signal support
- With and without Synergy Matrix video routing enabled

Monitors

Product Description	Item Number
Monitor, UHD/4K 32 in black (a)	AR-3250-3211
4K Monitor, 27 in	27HJ713S-W
UHD 4K Monitor, 55 in	K9307930
UHD 4K Monitor w/ Synergy Matrix Decoder, 55 in	K9307931
UHD 4K Monitor w/ Synergy Matrix Decoder, 58 in	991932207081

Monitor Covers

Product Description	Item Number
Protection Cover for 32 in Monitor, black	703459-15
Protection Cover for 26 in Monitor, black	703458-15
Tablet Cover for UHD4, black	703510-15



4K and HD Camera Heads



The latest generation Synergy^{HD} camera head is the world's first 4-chip camera head. Three sensors provide full 4K visible light imaging while the fourth sensor is specifically designed to support fluorescence imaging. In addition, Arthrex offers a portfolio of visible light only Synergy compatible camera heads in multiple versions to provide true 4K or 1080p HD resolution. The picture produced by all of the Synergy camera heads increases depth perception and creates more precise color reproduction. All of these camera heads carry the industry-leading standard autoclavable warranty while maintaining a comfortable and ergonomic design. With multiple configurations, the Synergy camera heads are adaptable to multispecialty accounts and continue to lead the market in arthroscopy.

Camera Heads

Product Description	Item Number
4K Synergy ^{JHD4™} Camera Head, broadband, autoclavable	AR-3210-0029
4K Synergy ^{JHD4} C-mount Camera Head, broadband, autoclavable	AR-3210-0030
4K Synergy ^{JHD4} Ultra Camera Head, autoclavable	AR-3210-0031
4K Synergy ^{JHD4} Ultra C-mount Camera Head, autoclavable (b)	AR-3210-0032
Synergy ^{HD} 4MOS Camera Head	AR-3210-0033
C-Mount Optical Zoom Coupler (c)	AR-3210-0006



Light Guides



Arthrex light guides are made from hundreds of high-quality fibers. Instead of gluing fibers, we fuse ours at the proximal end to maximize light transmission. The unique handle increases durability and prevents accidental removal of the light guide. Additionally, our transparent casing makes it easier to monitor when to replace light guides.

Product Description	Item Number
Light Guide Cable, blue, 3.5 mm × 2.7 m (a)	AR-3240-3527
Light Guide Cable, gray, 5 mm × 2.7 m, 90° distal end (b)	SS9-GYW50W108



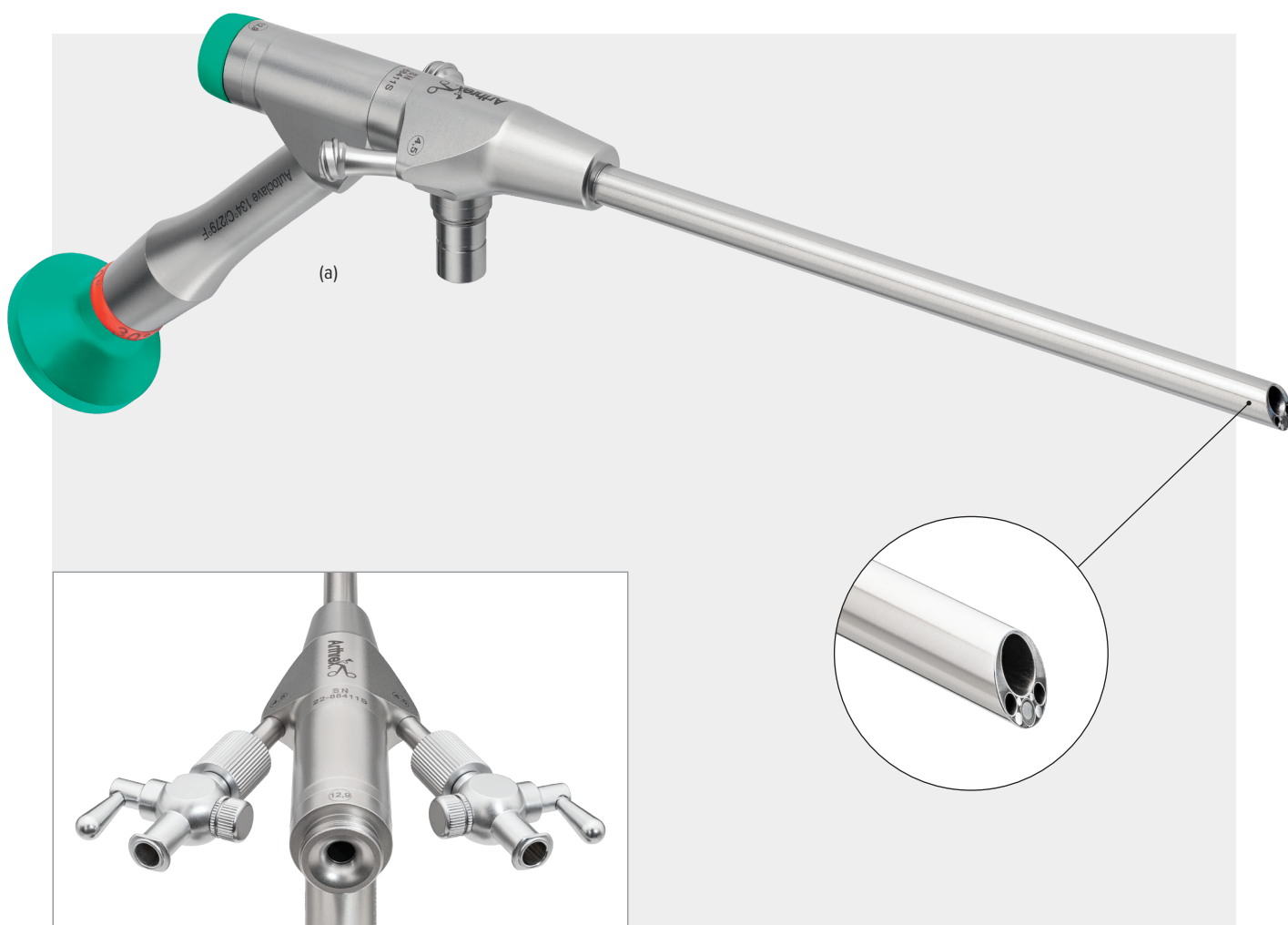
Spine Endoscopes

Designed for a uniportal approach, these spine-specific working channel endoscopes can be used through an incision between 7.5 mm and 11 mm, minimizing soft-tissue disruption.

Unlike microscopes, loops, and exoscopes, which are placed outside the body, endoscopes provide tissue-level visualization.

Features and benefits

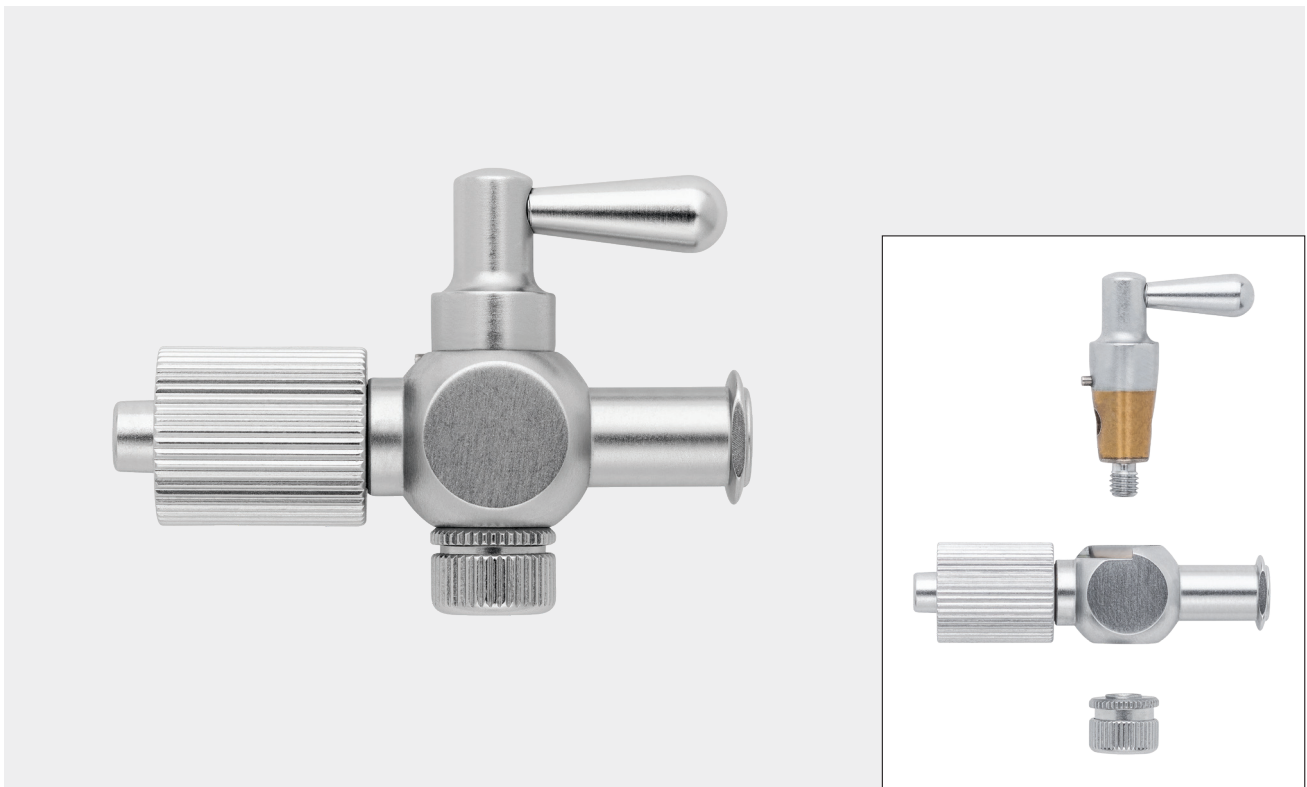
- Can be used in conjunction with depth stop (see page 53) and cannula holder (AR-S3420-CH), requiring less hands for the procedure and providing an ergonomic solution
- Integrated irrigation for a clear surgical field
- Camera tip reaches level of tissue for direct visualization
- Flexible for use with multiple visualization platforms



Product Description	Item Number
Spine Endoscope, 6.3 mm × 130 mm, 30° ■	AR-S3350-6330-130
Spine Endoscope, 6.3 mm × 181 mm, 30° ■	AR-S3350-6330-181
Spine Endoscope, 7 mm × 130 mm, 30° (a) ■	AR-S3350-7030-130
Spine Endoscope, 7 mm × 181 mm, 30° ■	AR-S3350-7030-181
Spine Endoscope, 10 mm × 139 mm, 15° ■	AR-S3350-1015-139

Scope compatibility guide: ■ 6.3 mm ■ 7 mm ■ 10 mm

Spine Endoscopes (Cont.)

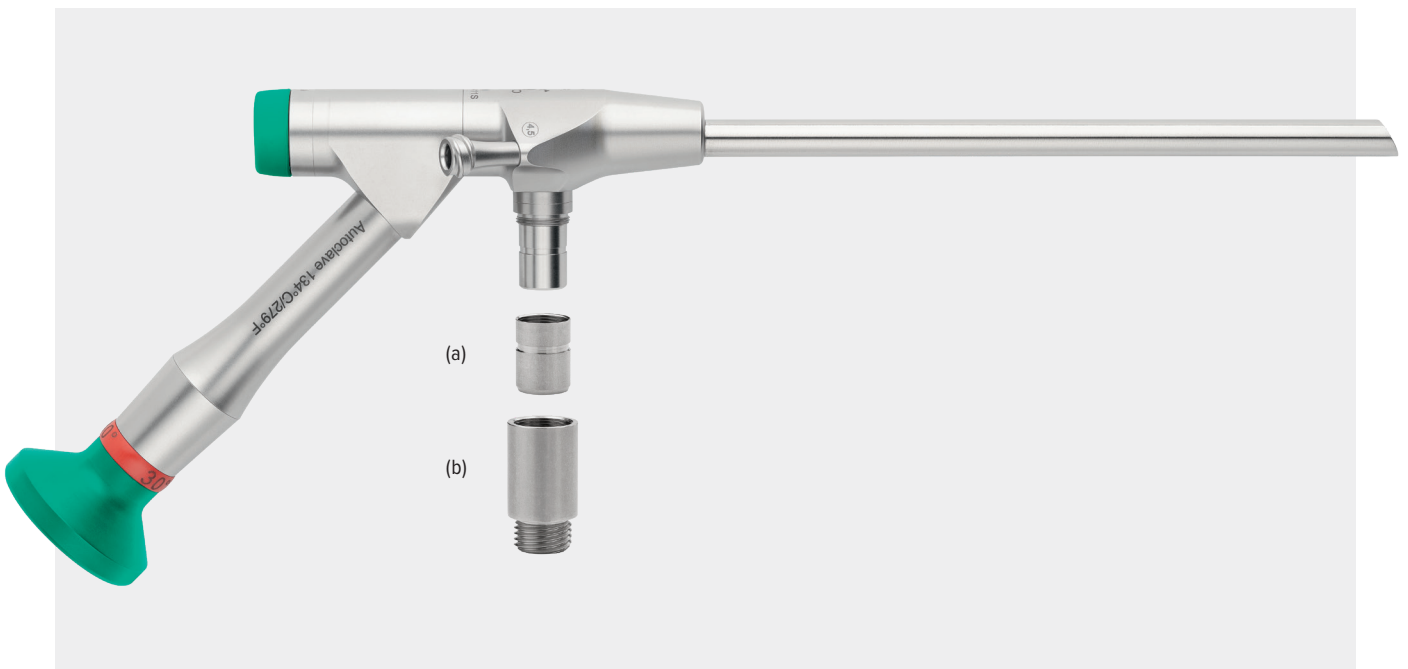


Product Description	Item Number
Stopcock	AR-S3350-000-001

Depth Stops

Product Description	Item Number
Spine Endoscope Depth Stop, 6.3 mm ■	AR-S3350-063-DS
Spine Endoscope Depth Stop, 7 mm ■	AR-S3350-070-DS
Spine Endoscope Depth Stop, 10 mm ■	AR-S3350-100-DS
Spine Endoscope Disposable Depth Stop, 6.3 mm ■	AR-S3350-063D-DS
Spine Endoscope Disposable Depth Stop, 7 mm ■	AR-S3350-070D-DS
Spine Endoscope Disposable Depth Stop, 10 mm ■	AR-S3350-100D-DS

Spine Endoscopes (Cont.)



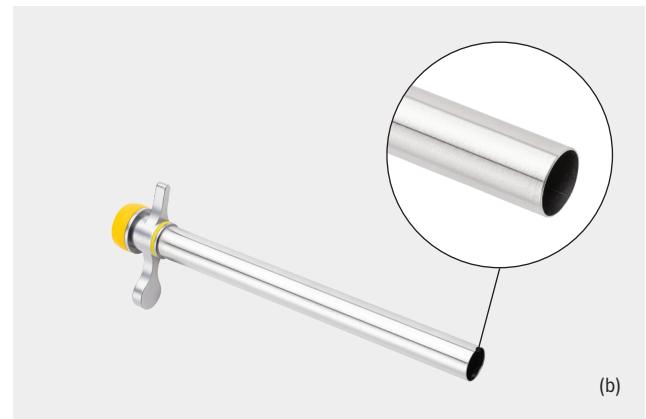
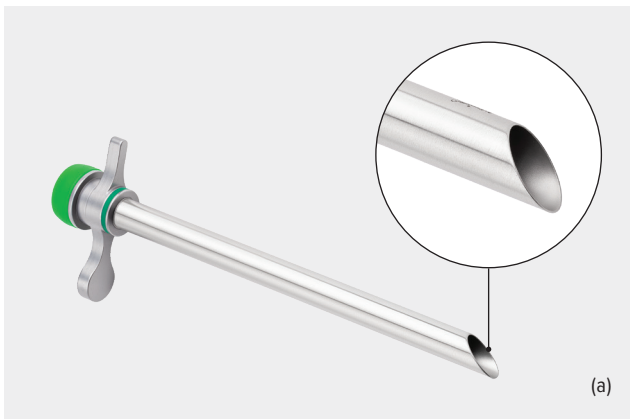
Product Description	Item Number
Wolf Adapter for Spine Endoscope (a)	8300042617
Storz Adapter for Spine Endoscope (b)	89542801



Product Description	Item Number
Spare Cap, endoscope, blue, 1 mm (c) ■	AR-S3375-100-BLU
Spare Cap, endoscope, green, 1 mm ■	AR-S3375-100-GRE
Spare Cap, endoscope, yellow, 1 mm ■	AR-S3375-100-YEL

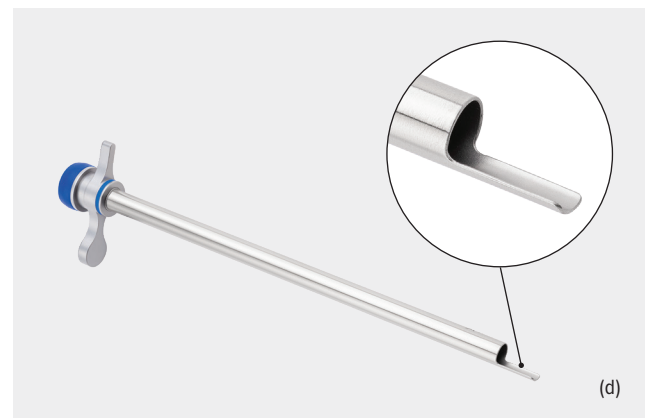
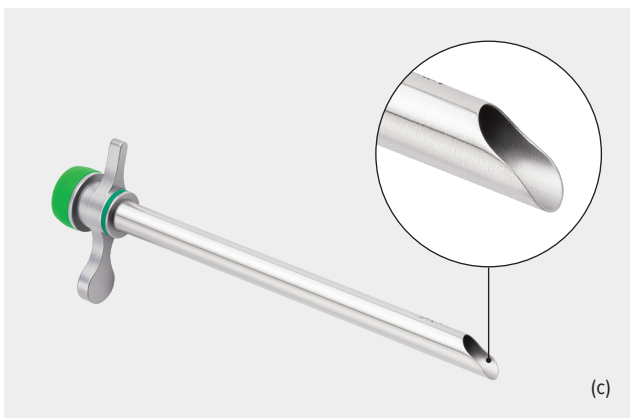
Scope compatibility guide: ■ 6.3 mm ■ 7 mm ■ 10 mm

Cannulas



Product Description	Item Number
Cannula, w/ oblique window, 7.5 mm × 178 mm ■	AR-S3420-075-178
Cannula, w/ oblique window, 8 mm × 125 mm (a) ■	AR-S3420-080-125
Cannula, w/ oblique window, 8 mm × 178 mm ■	AR-S3420-080-178
Cannula, w/ oblique window, 11 mm × 134 mm ■	AR-S3420-110-134

Product Description	Item Number
Cannula, w/ flat tip, 11 mm × 134 mm (b) ■	AR-S3420-110-134FT



Product Description	Item Number
Cannula, w/ elevator tip, 7.5 mm × 125 mm ■	AR-S3420-075-125ET
Cannula, w/ elevator tip, 7.5 mm × 178 mm ■	AR-S3420-075-178ET
Cannula, w/ elevator tip, 8 mm × 125 mm (c) ■	AR-S3420-080-125ET
Cannula, w/ elevator tip, 8 mm × 178 mm ■	AR-S3420-080-178ET

Product Description	Item Number
Cannula, w/ open tip, 7.5 mm × 178 mm (d) ■	AR-S3420-075-178OT
Cannula, w/ open tip, 8 mm × 178 mm ■	AR-S3420-080-178OT

Video Cart



The video cart features a modular shelf design to conform to any setup need. The power cords are prewired and cable management can be accomplished on either side of the cart. Large wheels and handles on each side of the cart ensure ease of movement throughout the OR.

The main monitor boom arm allows the monitor 38 in of reach and 15 in of vertical adjustment. Arm tension is adjustable to hold 19 in to 32 in monitors, and an easy-access handle and locking position facilitate cart movement. Mounted in the middle rear of the top shelf, the secondary arm is easily accessible by OR staff.

The monitor stand includes the cart with transformer, 5 shelves, 1 drawer, 1 foot pedal holder, 1 secondary arm, and a main monitor boom arm.

- Multiple configurations
- Adjustable shelves
- 38 in extended boom arm
- 200° rotatable touch panel arm
- Transformer included

Video Cart Stand



Video Cart and Monitor Stand

- Multiple configurations
- Adjustable shelves
- Printer access from rear of cart on top shelf
- 38 in extended boom arm
- 200° rotatable touch panel arm
- Transformer included

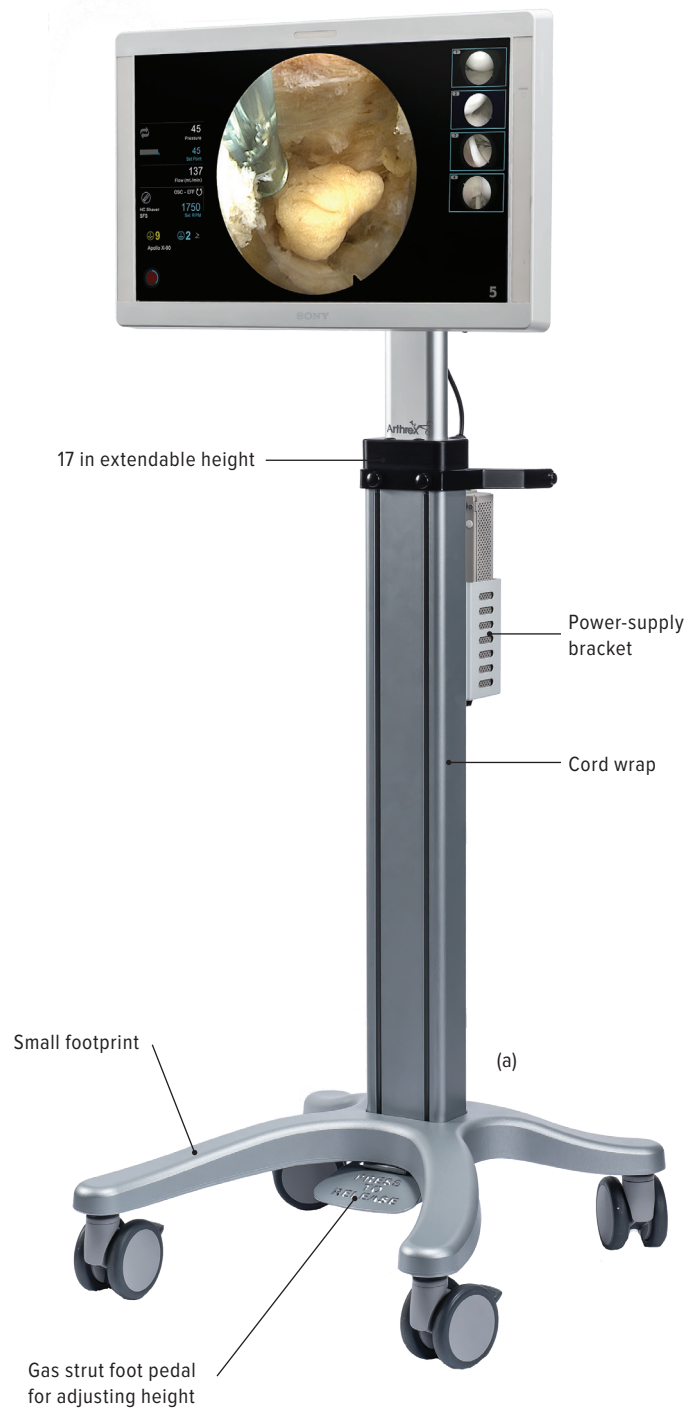


Product Description	Item Number
Video Cart w/ Static Mount	002386-00
Video Cart Version II w/ Extended Boom (a)	002317-00
Fixed Printer Shelf for Version II	304920-01
IV Bag Hanger, left, for video cart version II	304957-00
Power Strip Assembly for Video Cart Version II	304810-00
Touch Panel Arm, version II	304837-00
Home Position Bracket, video cart version II	304871-00
Side Panel, left, for video cart version II	304902-01
Side Panel, right, for video cart version II	304903-01
Rear Handle for Video Cart Version II	304911-01
Rear Door for Video Cart Version II	304913-00
Front Cover for Video Cart Version II	304937-00
Cable Connection Assembly for video cart version II	305102-00
Casters, 5 in, locking for video cart version II	002492-00
Rubber Grommet Kit, for video cart version II	002356-00
Arthrex Side Logo, 3.55 in h × 12 in	505050-00
Arthrex Front Logo, 0.75 in h × 2.75 in	505051-00
Adjustable Shelf	002361-00
CO ₂ Bottle Holder w/ Latch	002321-00
Pull-out Pump Shelf, version II	002318-00
Drawer, w/ adjustable shelf	002319-00
Drawer, w/o adjustable shelf	303914-00
Front Handle, universal (left/right)	304955-01
Foot Pedal Holder w/ Cord Wrap Brackets	305344-00
Power Cables, domestic, 3 ft, qty. 7	002363-00
Rear Door Hinge Kit (100 lb hinges with hardware), qty. 3	305304-00
Rear Door Compression Latch, lockable	703140-15
Boom Arm, 40 lb, version II	305468-00
Keyboard Tray, w/o shelf	303924-00
Boom Arm, 40 lb, version I	305468-00
Touch Panel Arm, top mount	304837-00
Touch-Up Paint, gray, 6 oz bottle	702465-20
Touch-Up Paint, nickel, 6 oz bottle	702481-20
Sticker Logo, side, for video cart	505050-00
Sticker Logo, front, for video cart	505051-00
Home Position Bracket	304871-00
Drawer, w/o Adjustable shelf	304914-00
Isolation Transformer Assembly, 120 VAC, 11.3 amp	002305-00
Front Handle	002340-00
Cable Kit, service part	304373-00

Secondary Monitor Stand

- Small footprint
- Adjustable monitor height
- Large casters for ease of mobility
- Locking casters
- Dimensions: 22 in (w) × 57.5 in (h) × 23 in (l)

Product Description	Item Number
Arthrex Secondary Monitor Stand (a)	304830-00
4-Outlet Power Strip, 15 ft cord	002313-00
Tablet Arm, single link, for stand	304855-00
Caster, 4-in twin wheel, brake	703129-15
Caster, 4-in twin wheel, swivel	703128-15
Adjustable Shelf for Stand	304813-01



NanoScope™ System

The NanoScope System is a medical-grade, 3-in-1, chip-on-tip disposable camera system. With an intuitive tablet control unit, the system features the latest technologies in 1 mm imaging sensors, LED lighting, image management, and OR integration. The network-based system allows for bidirectional communication to your facility EHR, PACS, Synergy Surgeon App™ software, and SurgeonVault® system.



Tablet Control Unit Components

- 13 in HD monitor
- Handpiece connector
- Microphone
- Ethernet, USB, and HDMI ports



NanoNeedle Standard Lengths

- 250 mm (a)
- 120 mm
- 180 mm

NanoScope™ System (Cont.)

Economic Impact

Nano arthroscopy is a cost-effective alternative to standard arthroscopy. A single-use camera component eliminates procedure delays due to equipment cleaning, processing, and sterilization without costly maintenance, repairs, or upgrades related to traditional video stacks. The minimally invasive approach and unlimited access to joint spaces make the NanoScope system the instrument of choice for less invasive arthroscopic procedures.

Product Description	Item Number
NanoNeedle Scope, 250 mm, single use	AR-3210-0045
NanoScope Tablet Control Unit	AR-3200-0030
NanoScope Console Mobile Cart (a)	AR-3502-CRT
NanoScope Console Battery Supply Replacement	150-0012-00-A



NanoScope™ Console

The NanoScope system combines the latest technologies in small imaging sensors, LED lighting, and image management with an intuitive control unit.

- Portable control unit—including documentation and data management
- 13 in touch screen monitor
- Rechargeable battery-powered
- Medical-grade device
- Ethernet, USB, and HDMI ports and wireless network capabilities
- Integrated microphone

Product Description	Item Number
NanoScope Console (a)	AR-3200-0030





skytron

AURORA

skytron

GS70H SALUS

Adaptair
ADAPTEUR POWER SYSTEM II™

Fluid Management

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Trademarks are the property of their respective owners.

The Suctioner® Surgical Suction Mat



This disposable surgical mat combines the absorbency of the poly-backed Dri-Safe® pad and the nonslip, anti-fatigue memory foam construction of The Surgical Mat™ with powerful, quiet, and continuous suction capability. These features are designed to support a drier, safer, cleaner OR. The Suctioner mat has graduated slots to move fluid toward lateral suction tubes.

It easily attaches to any OR vacuum source in seconds and efficiently manages unwanted fluids, keeping them off the OR floor. The mat's antimicrobial properties also aid in reducing the risk of cross-contamination. This latex-free surgical mat is ideal for all surgical procedures.

Product Description	Item Number
The Suctioner Surgical Mat, 22 in × 35 in (comfort mat), 35 in × 56 in (total), blue, qty. 8	USA-X10

The EcoSuctioner® Surgical Suction Mat



- All-in-one ergonomic suction mat that allows two people to stand comfortably during a procedure
- Designed with directional grooves for improved quiet, continual suction; attaches to any suction source
- Large, rugged absorbent mat included on underside creates more nonslip surface in OR
- Lightweight suction mat, weighs 0.79 kg, allowing for quick and easy setup and removal
- Reduces laundry on the floor

Product Description	Item Number
The EcoSuctioner Surgical Mat, 28 in × 40 in (comfort mat), 35 in × 56 in (total), green, qty. 8	USA-XG8

The Suctioner, Dri-Safe, The Surgical Mat, and The EcoSuctioner are trademarks of Flagship Surgical, LLC.

The SuctionBlu™ Mat



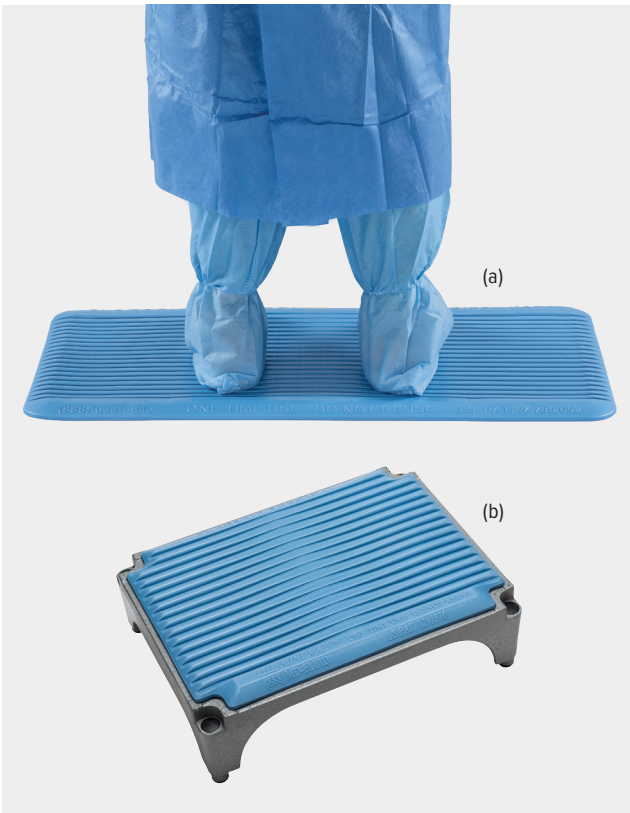
The SuctionBlu disposable surgical mat combines the absorbency of the poly-backed Dri-Safe® pad and the nonslip, anti-fatigue memory foam construction of The EcoSuctioner® mat with powerful, quiet, continuous suction capability. These features are designed to create a drier, safer, and cleaner operating room.

The graduated slots on The SuctionBlu mat use gravity to direct fluids toward the suction tube. The SuctionBlu mat easily attaches to any OR vacuum source in seconds and efficiently manages unwanted fluids, keeping them off the floor.

The SuctionBlu mat is a smaller, more economical version of The EcoSuctioner mat but larger than The Suctioner® mat.

Product Description	Item Number
The SuctionBlu Surgical Mat, 36 in × 56 in, blue	USA-XBL

The Surgical Mat™ and The Mini Mat™ Surgical Mats



The Surgical Mat and The Mini Mat surgical mats were designed to address three OR issues: comfort, safety, and fluid buildup. Both mats are constructed of a resilient memory foam material that provides relief and support when standing on hard concrete floors and steel step stools. The mats feature a nonslip molded foam design and custom tapered fluid channels to keep the surgical team's feet dry and reduce the risk of tracking body fluids across the OR. The Surgical Mat and The Mini Mat surgical mats are latex-free and ideal for all surgical procedures.

Product Description	Item Number
The Surgical Mat Surgical Mat, 20 in × 39 in, blue, qty. 10 (a)	USA-010
The Mini Mat Surgical Mat, 13 in × 17 in, blue, qty. 10 (b)	USA-A10

The Suctioner, Dri-Safe, The Surgical Mat, and The EcoSuctioner are trademarks of Flagship Surgical, LLC.

EcoDri-Safe™ Absorbent Rolls



Containing fluids and streamlining clean-up procedures has never been easier than with the new EcoDri-Safe absorbent rolls. The 28 in × 100 ft rolls are perforated every 20 inches to create 60 easy-to-tear-off 20 in × 28 in floor mats on every roll.

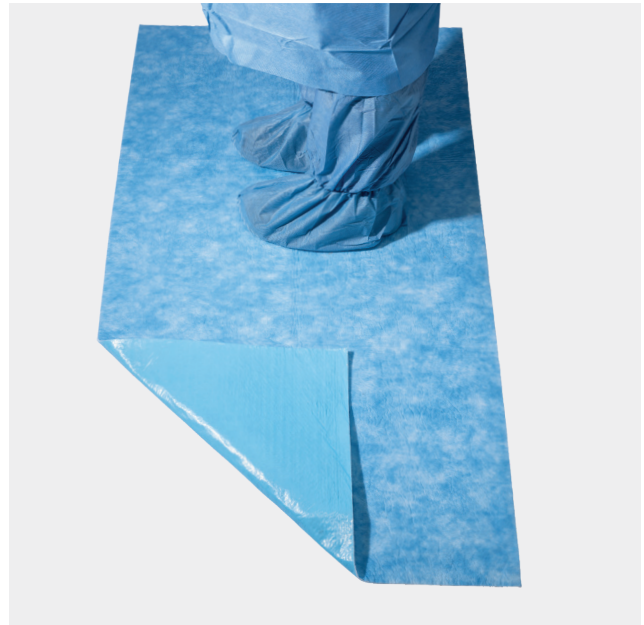
EcoDri-Safe absorbent rolls are ideal wherever fluid containment can be an issue:

- Operating rooms
- Scrub sinks
- Laboratory stations
- Central processing
- Emergency rooms
- Procedure rooms

Product Description	Item Number
EcoDri-Safe Non-Poly-Backed, 100 ft × 28 in, 20 in × 28 in, 60 sheets per roll	USA-ECO100
EcoDri-Safe Poly-Backed, 100 ft × 28 in, 20 in × 28 in, 60 sheets per roll	USA-ECO100PLY
EcoDri-Safe Dispensing Cart	USA-ECODISP

EcoDri-Safe is a trademark of Flagship Surgical, LLC.

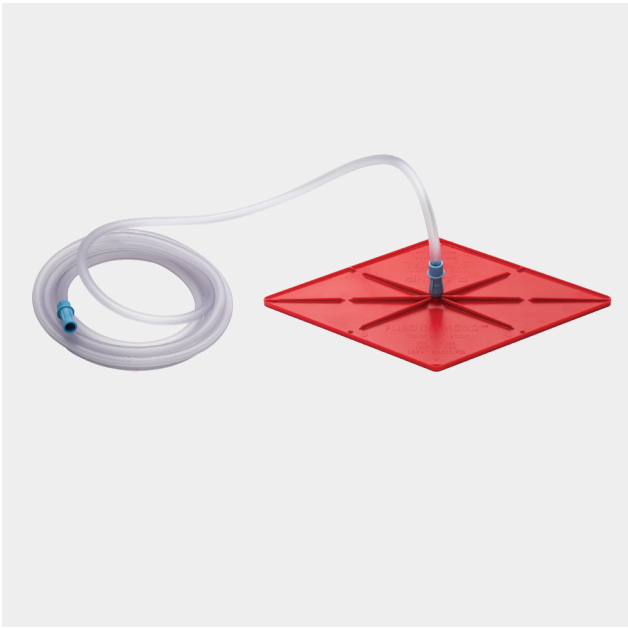
Dri-Safe® Absorbent Pads



- Super absorbent, economical, disposable floor pads that eliminate expensive laundry costs
- Use wherever fluids buildup, including OR floors, in front of scrub sinks, lab station floors, etc
- Dri-Safe pads help prevent slips and falls and the transmission of harmful contaminants to health care providers
- Impermeable poly-backing option promotes safety, keeps the pads firmly in place, and locks in fluids

Product Description	Item Number
Dri-Safe Absorbent Pad, 28 in × 40 in, blue, qty. 20	USA-B28X40
Dri-Safe Absorbent Pad, 28 in × 40 in, blue, poly-backing, qty. 20	USA-B28X40PLY
Dri-Safe Absorbent Pad, 30 in × 56 in, blue, qty. 15	USA-B30X56
Dri-Safe Absorbent Pad, 30 in × 56 in, blue, poly-backing, qty. 15	USA-B30X56PLY

Fluid Diamond® Floor Aspirator



- Fast, effective fluid collection
- Powerful suction action keeps floors dry and reduces the potential for slipping or falling
- Eliminates the need for slippery, costly towels and blankets on the OR floor to absorb fluids
- Designed with quieting pad and anti-floor-sticking technology
- Attaches to any surgical suction source
- Includes easily attachable suction tubing

Product Description	Item Number
Fluid Diamond Floor Aspirator, qty. 30	USA-FDX

Fluid Diamond is a trademark of Flagship Surgical, LLC.

ArthroVac™ Floor Suction System



The ArthroVac active suction device is used to clean up unwanted fluid inside the OR. Attach the ArthroVac system to an OR vacuum to suck fluid quickly and quietly into a waste container.

Product Description	Item Number
ArthroVac Floor Suction System (a)	AR-4004
ArthroVac Telescoping Handle and Connector (b)	AR-4004H
ArthroVac Felt Pads, qty. 10 (c)	AR-4004P

Office Suction Pump and Disposable Canister



A medical suctioning device and solution with minimal noise, the office suction pump produces a maximum vacuum of 560 mmHg for use with Nano arthroscopy. Additionally, the 800 cc disposable collection cannister is designed for convenient and reliable aspiration of waste.

- Works with the 2.26 and 3.3 high-flow NanoScope™ sheaths
- New antibacterial filter design helps prevent contamination
- High-quality vacuum regulator and antivibration vacuum gauge setting
- Oilless, permanent lubrication
- Collection bottle with overflow protection
- Superior performance and reliability for continuous operation design
- Easy to carry and easy to clean

Product Description	Item Number
Vacuum Pump	18600
Canister Kit	22330
Canister Kit (12-pack)	22330-12



Synergy ElectroSurgery System

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FlexTip RF Probes.....	35

Synergy ElectroSurgery Generator

The Synergy ElectroSurgery system was developed specifically for endoscopic spine procedures. High-frequency currents (4 MHz) allow for precise tissue resection and ablation to help avoid critical neurological structures.



(a)



(c)



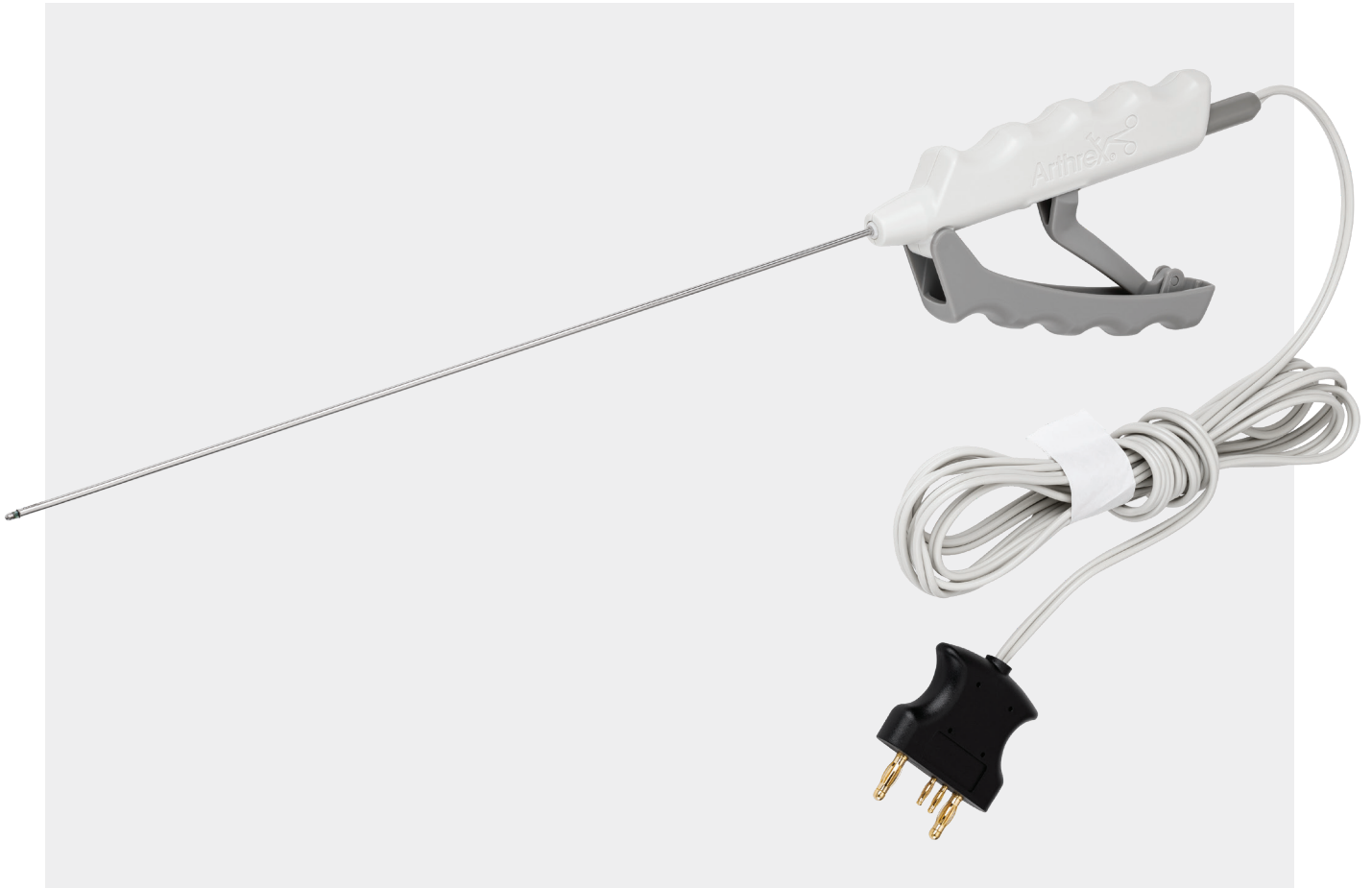
(b)

Product Description	Item Number
Synergy ES Console (a)	AR-S9800
Synergy ES Footswitch w/ Handle (b)	AR-S9800-F1
Synergy ES Footswitch (c)	AR-S9800-F2

Synergy
ElectroSurgery

FlexTip RF Probes

FlexTip RF probes feature an articulating tip and an ergonomic WishBone™ handle.

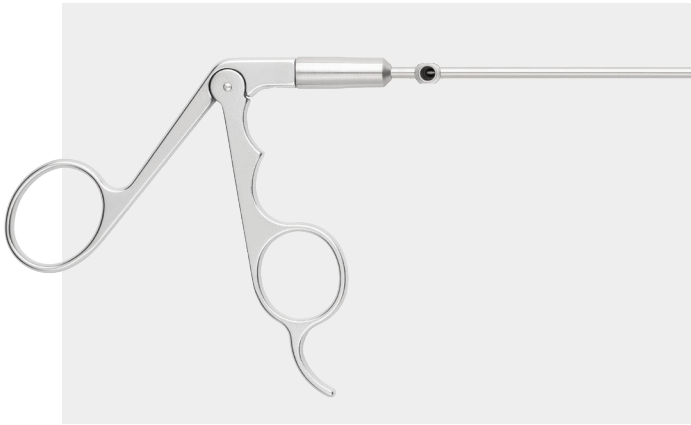


Product Description	Item Number
FlexTip RF Probe, 28 cm	AR-S9805-0028
FlexTip RF Probe, 35 cm	AR-S9805-0035



Instruments

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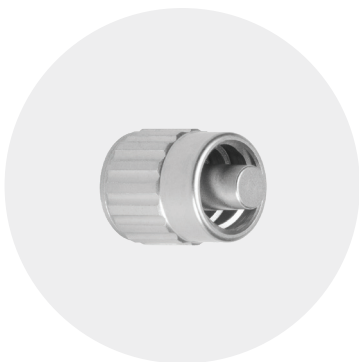
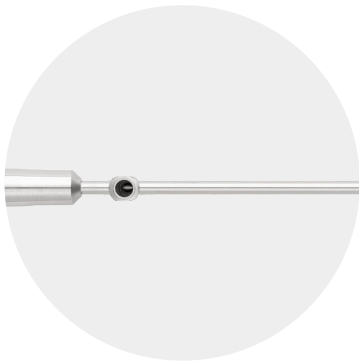
Pistol Grip

Tried and tested, these pistol grip instruments feature comfortable, ergonomic loop handles for simple and precise control in a wide range of different hand positions and tissue resection procedures.



WishBone™ Grip

Pioneered by Arthrex nearly 3 decades ago to prioritize surgeon comfort and ergonomics, this series of endoscopic instruments features superior feel and improved ergonomics that facilitate inverted and retrograde usage with either hand. Designed specifically for endoscopic spine procedures, this product line includes a comprehensive variety of tip styles, angles, sizes, and shaft diameters. Ceramic coating increases durability and life span, while silicone coating on the handle allows for increased comfort and control.



FlushPort

The unique FlushPort connection design allows for easy and efficient instrument cleaning particularly of the inner lumen. The familiar Luer-lock connector offers the possibility of a simple connection of the instruments to, for example, the rinsing port of a washer-disinfector. The instruments come with an attached silicone cap; a metal cap is available to close the Luer lock during standard use, according to user preference.

Luer Lock Cap (sold separately)

Closes the hand instrument's Luer-lock FlushPort connection during use. It is recommended to purchase 1 cap per hand instrument.

Product Description	Item Number
FlushPort Luer-Lock Cap, for use with FlushPort hand instruments, reusable	AR-150301F



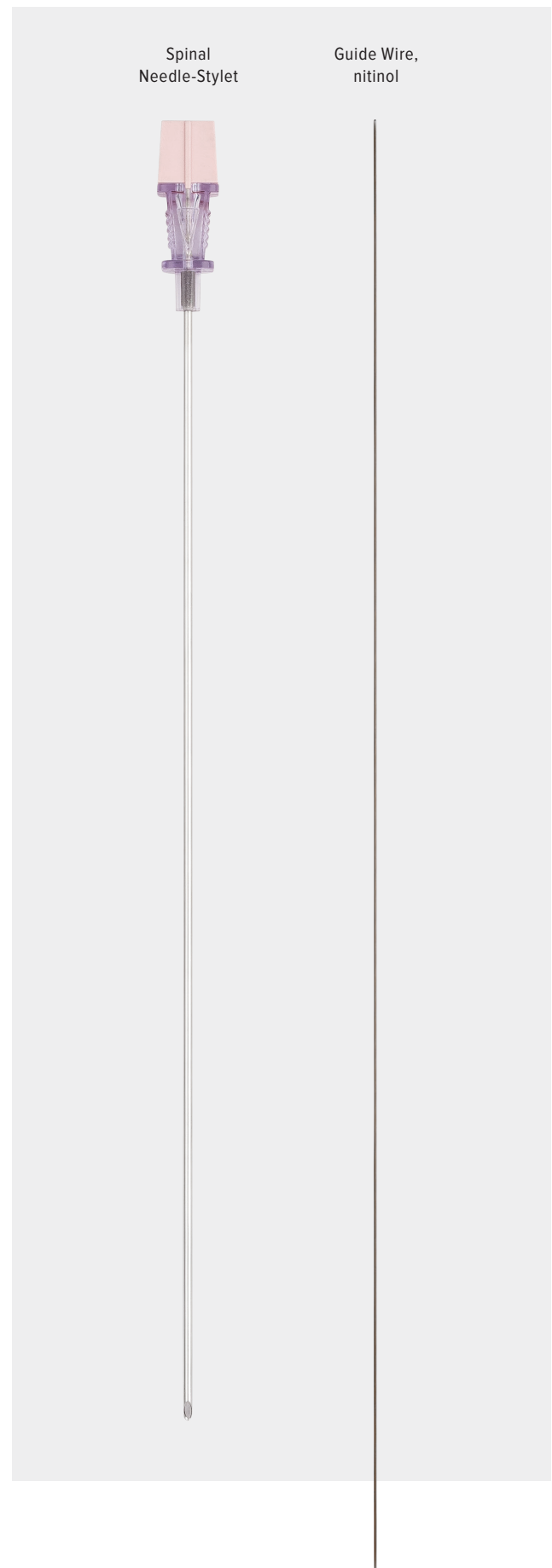
Endoscopic Spine Access Kit

Sterile disposable kit includes all equipment necessary for initial access, conveniently contained in one package.

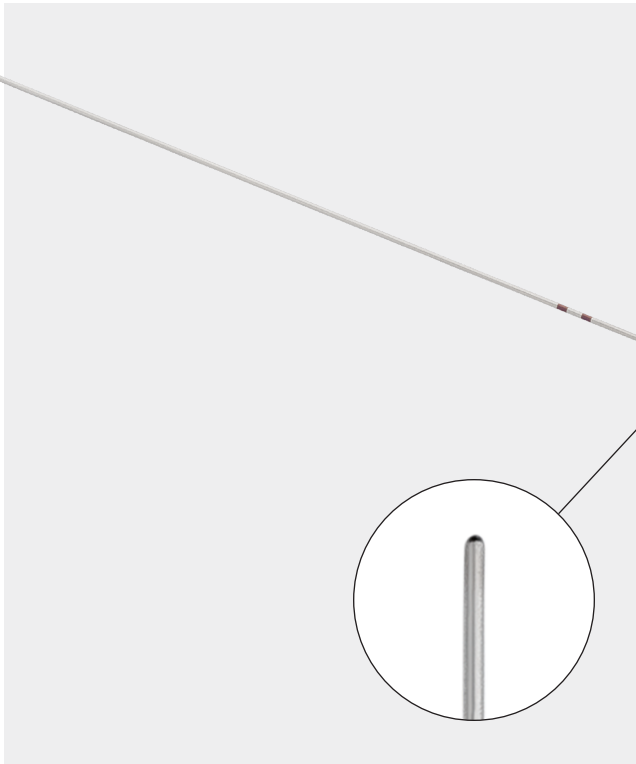
Cannula Insertion Recommendations

1. Insert calibrated needle stylet.
2. Remove stylet and insert guidewire through needle.
3. Remove the needle, keeping guidewire in place.
4. Insert serial dilator(s)/switching stick to the desired diameter.
5. Insert cannula over serial dilator(s).
6. Remove guidewire and serial dilator(s).

Product Description	Item Number
Spine Access Disposable Kit	AR-S4000-K-S
Guidewire, nitinol, 0.8 mm × 400 mm	AR-S4000-008-400

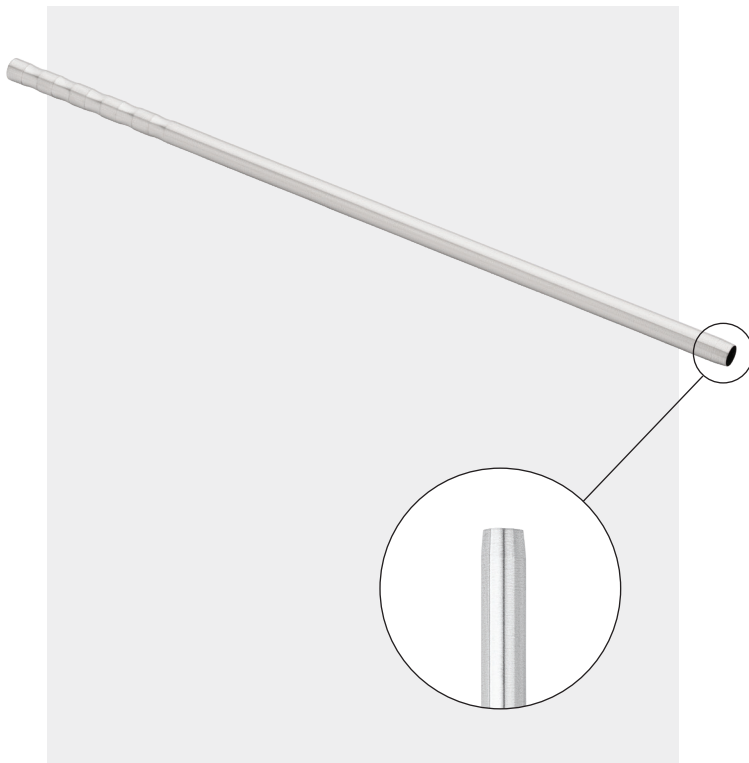


Needles and Guidewires



Product Description	Item Number
Guidewire, 0.7 mm × 400 mm	AR-S4000-007-400
Guidewire, nitinol, 0.8 mm × 400 mm	AR-S4000-008-400

Dilators



- Conical dilators are ideal for step dilations during endoscopic and MIS procedures
- Switching sticks are two-channel dilators that allow for single-step dilation

Product Description	Item Number
Dilator, 2.5 mm × 230 mm (a)	AR-S6524-025-230
Dilator, 4 mm × 230 mm	AR-S6524-040-230
Dilator, 4.1 mm × 185 mm (b)	AR-S6524-041-185
Dilator, 5 mm × 230 mm	AR-S6524-050-230
Dilator, 5.1 mm × 170 mm (c)	AR-S6524-051-170
Dilator, 6 mm × 160 mm (d) ■	AR-S6524-060-160
Dilator, 7.1 mm x 185 mm ■	AR-S6524-071-185
Dilator, curved 2.5 mm × 230 mm	AR-S6524-025-230C



Scope compatibility guide: ■ 6.3 mm ■ 7 mm

Switching Sticks

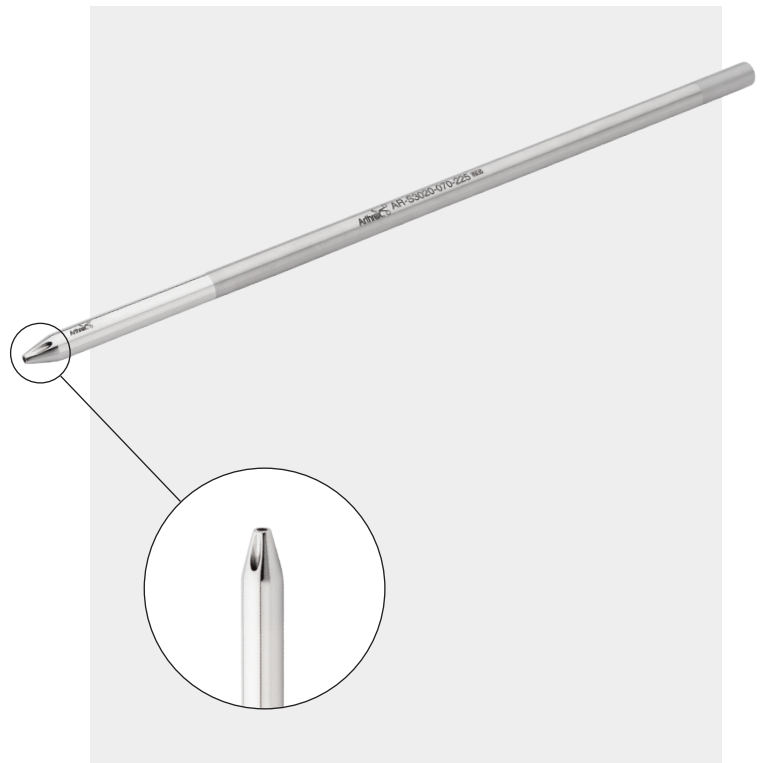
(a)



(b)

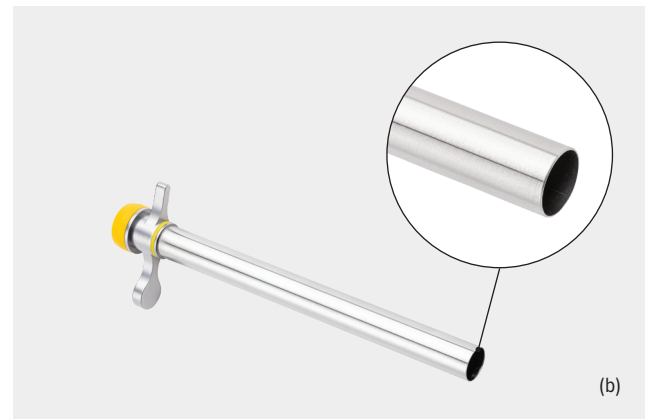
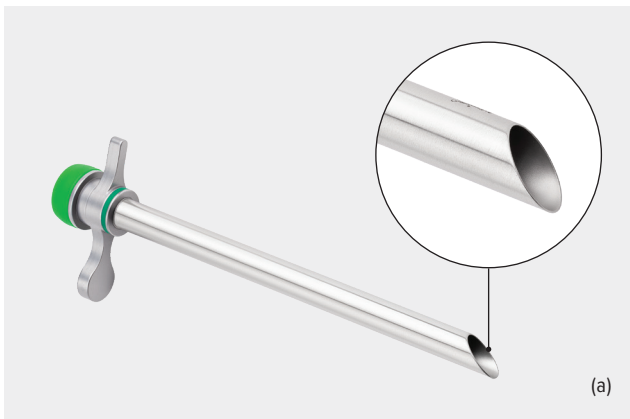


(c)



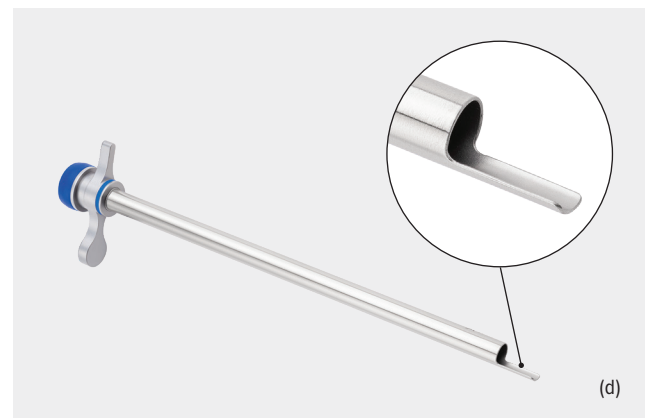
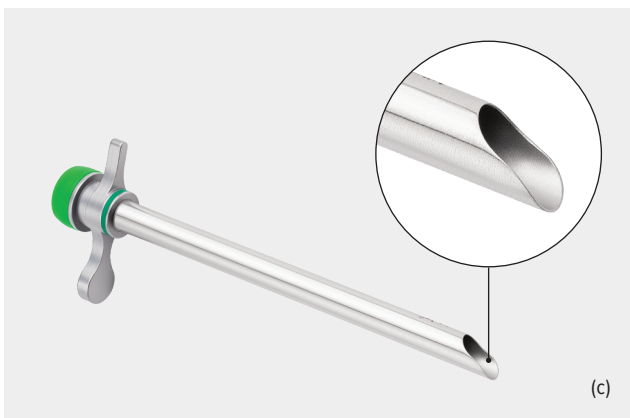
Switching Stick, 5.3 mm × 225 mm (a)	AR-S3020-053-225
Switching Stick, 6.3 mm × 225 mm (b) ■	AR-S3020-063-225
Switching Stick, 7 mm × 225 mm (c) ■	AR-S3020-070-225
Switching Stick, 10 mm × 185 mm ■	AR-S3020-100-185

Cannulas



Product Description	Item Number
Cannula, w/ oblique window, 7.5 mm × 178 mm ■	AR-S3420-075-178
Cannula, w/ oblique window, 8 mm × 125 mm (a) ■	AR-S3420-080-125
Cannula, w/ oblique window, 8 mm × 178 mm ■	AR-S3420-080-178
Cannula, w/ oblique window, 11 mm × 134 mm ■	AR-S3420-110-134

Product Description	Item Number
Cannula, w/ flat tip, 11 mm × 134 mm (b) ■	AR-S3420-110-134FT



Product Description	Item Number
Cannula, w/ elevator tip, 7.5 mm × 125 mm ■	AR-S3420-075-125ET
Cannula, w/ elevator tip, 7.5 mm × 178 mm ■	AR-S3420-075-178ET
Cannula, w/ elevator tip, 8 mm × 125 mm (c) ■	AR-S3420-080-125ET
Cannula, w/ elevator tip, 8 mm × 178 mm ■	AR-S3420-080-178ET

Product Description	Item Number
Cannula, w/ open tip, 7.5 mm × 178 mm (d) ■	AR-S3420-075-178OT
Cannula, w/ open tip, 8 mm × 178 mm ■	AR-S3420-080-178OT

Scope compatibility guide: ■ 6.3 mm ■ 7 mm ■ 10 mm

Punches



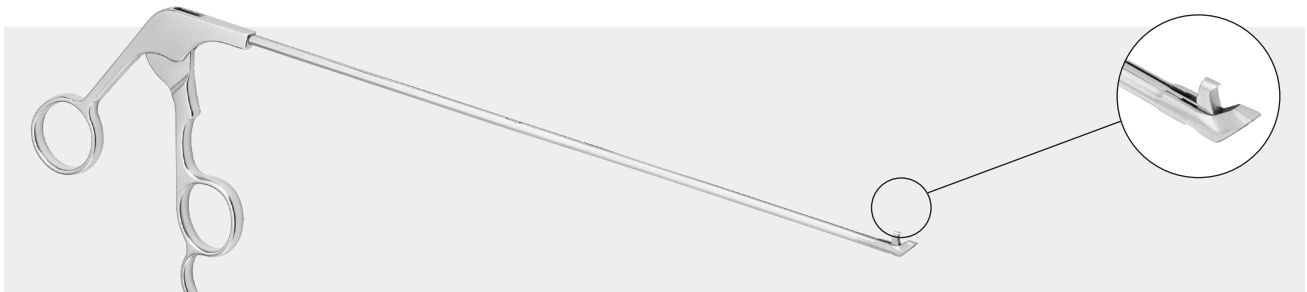
Duckling Punches

Product Description	Item Number
Duckling Punch, 2.5 mm × 330 mm ■■■	AR-S7111-025-330
Duckling Punch, 2.5 mm × 330 mm, WishBone™ handle ■■■	AR-S7111-025-330W
Duckling Punch, 3.5 mm × 330 mm ■■■	AR-S7111-035-330
Duckling Punch, 3.5 mm × 330 mm, WishBone handle ■■■	AR-S7111-035-330W



Scissor Punches

Product Description	Item Number
Scissor Punch, 2 mm × 260 mm ■■■	AR-S7116-020-260
Scissor Punch, 2 mm × 260 mm, WishBone handle ■■■	AR-S7116-020-260W
Scissor Punch, 2.5 mm × 260 mm ■■■	AR-S7116-025-260
Scissor Punch, 2.5 mm × 260 mm, WishBone handle ■■■	AR-S7116-025-260W
Scissor Punch, 2.5 mm × 330 mm ■■■	AR-S7116-025-330
Scissor Punch, 2.5 mm × 330 mm, WishBone handle ■■■	AR-S7116-025-330W
Scissor Punch, 4 mm × 260 mm ■■	AR-S7116-040-260
Scissor Punch, 4 mm × 260 mm, WishBone handle ■■	AR-S7116-040-260W
Scissor Punch, 4 mm × 330 mm ■■	AR-S7116-040-330



Up-Angle Scissor Punches

Product Description	Item Number
Scissor Punch, up angle, 2.5 mm × 330 mm ■■■	AR-S7116-025U-330
Scissor Punch, up angle, 2.5 mm × 330 mm, WishBone handle ■■■	AR-S7116-025U-330W
Scissor Punch, up angle, 3.5 mm × 260 mm ■	AR-S7116-035U-260
Scissor Punch, up angle, 3.5 mm × 260 mm, WishBone handle ■	AR-S7116-035U-260W

Forceps



Product Description	Item Number
Blakesley Forceps, 3.5 mm × 330 mm ■■■	AR-S7118-035-330
Blakesley Forceps, 3.5 mm × 330 mm, WishBone™ handle (b) ■■■	AR-S7118-035-330W
Cup Forceps, 2.5 mm × 260 mm ■■■	AR-S7110-025-260
Cup Forceps, 2.5 mm × 260 mm, WishBone handle ■■■	AR-S7110-025-260W
Cup Forceps, 2.5 mm × 330 mm ■■■	AR-S7110-025-330
Cup Forceps, 2.5 mm × 330 mm, WishBone handle ■■■	AR-S7110-025-330W
Cup Forceps, 3 mm × 330 mm ■■■	AR-S7110-030-330
Cup Forceps, 3 mm × 330 mm, WishBone handle ■■■	AR-S7110-030-330W
Cup Forceps, 3.5 mm × 260 mm ■■■	AR-S7110-035-260
Cup Forceps, 3.5 mm × 260 mm, WishBone handle ■■■	AR-S7110-035-260W
Cup Forceps, 3.5 mm × 330 mm (c) ■■■	AR-S7110-035-330
Cup Forceps, 3.5 mm × 330 mm, WishBone handle ■■■	AR-S7110-035-330W
Cup Forceps, 4 mm × 260 mm ■■	AR-S7110-040-260
Cup Forceps, 4 mm × 260 mm, WishBone handle ■■	AR-S7110-040-260W
Cup Forceps, 4 mm × 330 mm ■■	AR-S7110-040-330
Cup Forceps, 4 mm × 330 mm, WishBone handle ■■	AR-S7110-040-330W
Cup Forceps, up angle, 2 mm × 330 mm ■■■	AR-S7110-020U-330
Cup Forceps, up angle, 2 mm × 330 mm, WishBone handle ■■■	AR-S7110-020U-330W
Cup Forceps, up angle, 2.5 mm × 330 mm (a) ■■■	AR-S7110-025U-330
Cup Forceps, up angle, 2.5 mm × 330 mm, WishBone handle ■■■	AR-S7110-025U-330W



Scope compatibility guide: ■ 6.3 mm ■ 7 mm ■ 10 mm

Graspers



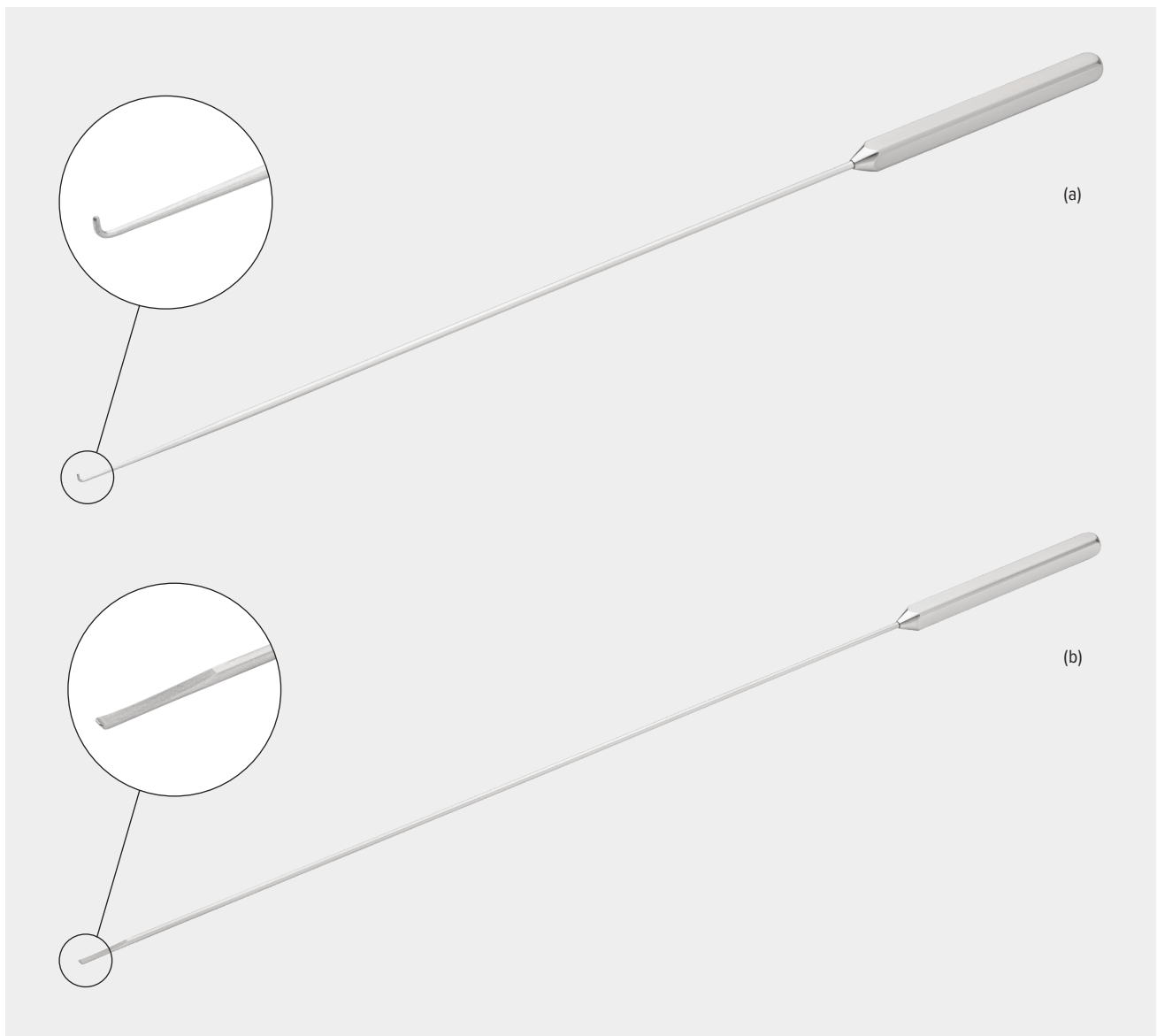
Product Description	Item Number
Cup Grasper, serrations, 2 mm × 330 mm cup ■■■	AR-S7121-020-330
Grasper, serrations, 2 mm × 330 mm, WishBone™ handle ■■■	AR-S7121-020-330W
Cup Grasper, teeth, 2.5 mm × 330 mm ■■■	AR-S7120-025-330
Cup Grasper, teeth, 2.5 mm × 330 mm, WishBone handle ■■■	AR-S7120-025-330W
Cup Grasper, semi-flexible, teeth, 2.5 mm × 330 mm cup (a) ■■■	AR-S7125-025F-330
Grasper, semi-flexible, teeth, 2.5 mm × 330 mm, WishBone handle ■■■	AR-S7125-025F-330W
Cup Grasper, semi-flexible, 3 mm × 260 mm ■■■	AR-S7125-030F-260
Cup Grasper, semi-flexible, 3 mm × 260 mm, WishBone handle ■■■	AR-S7125-030F-260W
Cup Grasper, semi-flexible, 3 mm × 330 mm (b) ■■■	AR-S7125-030F-330
Cup Grasper, semi-flexible, 3 mm × 330 mm, WishBone handle ■■■	AR-S7125-030F-330W

Scissors

Product Description	Item Number
Hook Scissors, 2.5 mm × 260 mm ■■■	AR-S7115-025-260
Hook Scissors, 2.5 mm × 260 mm, WishBone handle ■■■	AR-S7115-025-260W
Hook Scissors, 2.5 mm × 330 mm ■■■	AR-S7115-025-330
Hook Scissors, 2.5 mm × 330 mm, WishBone handle ■■■	AR-S7115-025-330W

Scope compatibility guide: ■ 6.3 mm ■ 7 mm ■ 10 mm

Manual Instruments

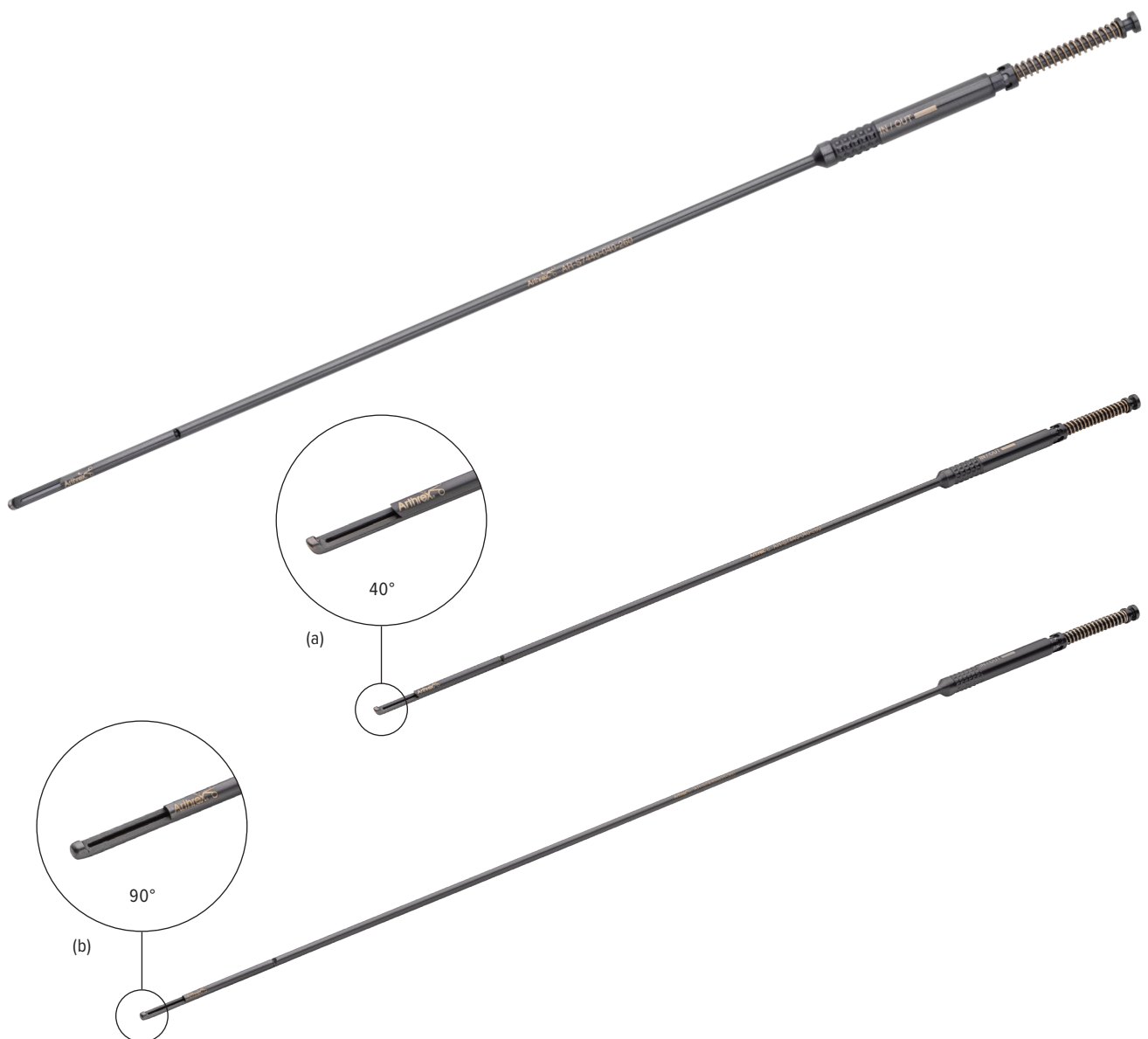


Product Description	Item Number
Hook Probe, 2.5 mm × 260 mm (a) ■■■	AR-S10030-025-260
Hook Probe, 2.5 mm × 310 mm ■■■	AR-S10030-025-310
Bone Awl, 3 mm × 310 mm ■■■	AR-S7324-030-310
Bone Chisel, V cut, 3 mm × 310 mm ■■■	AR-S7323-030V-310
Elevator, 2.5 mm × 310 mm (b) ■■■	AR-S1342-025-310
Elevator, 3 mm × 260 mm ■■■	AR-S1342-030-260
Elevator, 3 mm × 310 mm ■■■	AR-S7323-030-310
Bone Curette, 2 mm × 260 mm ■■■	AR-S7305-020-260
Bone Curette, 3.5 mm × 330 mm ■■■	AR-S7305-035-330
Kerrison/Ball Tip Probe, w/ handle	AR-S7400-000-000H
Kerrison/Ball Tip Probe, w/ WishBone™ handle	AR-S7400-000-000W
Ball Tip Probe, flexible, w/ WishBone handle	AR-S7400-035-330W
Ball Tip Probe, shaft, flexible, 330 mm	AR-S7400-035-330
Ball Tip Probe, flexible, w/ handle	AR-S7400-035-330H
Probe, articulating, 3 mm x 330 mm ■■■	AR-S7310-030-330
Ball Tip Probe, flexible, assembly ■■■	AR-S7310-035-380

Manual Instruments (Cont.)



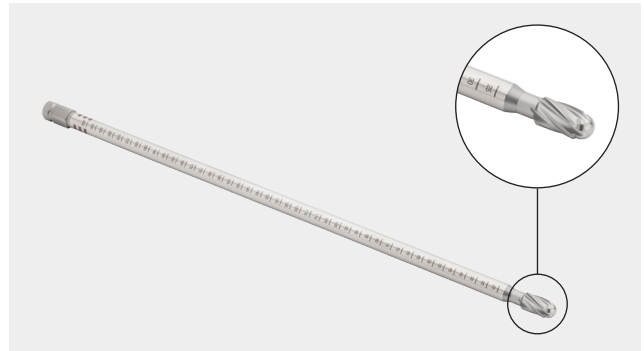
Product Description	Item Number
Kerrison Handle	AR-S7400-000-000H
Kerrison Handle, WishBone™ handle	AR-S7400-000-000W
Kerrison, 2.5 mm × 360 mm, 40° ■ ■ ■	AR-S7440-025-360
Kerrison, 3.5 mm × 260 mm, 40° ■ ■ ■	AR-S7440-035-260
Kerrison, 3.5 mm × 360 mm, 40° ■ ■ ■	AR-S7440-035-360
Kerrison, 4 mm × 260 mm, 40° (a) ■ ■	AR-S7440-040-260
Kerrison, 4 mm × 360 mm, 40° ■ ■	AR-S7440-040-360
Kerrison, 5 mm × 260 mm, 40° ■	AR-S7440-050-260
Kerrison, 6 mm × 260 mm, 40° ■	AR-S7440-060-260
Kerrison, up angle, 4 mm × 260 mm, 40° ■	AR-S7440-040U-260
Kerrison, 3.5 mm × 360 mm, 90° (b) ■ ■ ■	AR-S7490-035-360
Kerrison, 4 mm × 260 mm, 90° ■ ■	AR-S7490-040-260
Kerrison, 4 mm × 360 mm, 90° ■ ■	AR-S7490-040-360
Kerrison, 5 mm × 260 mm, 90° ■	AR-S7490-050-260
Kerrison, 6 mm × 260 mm, 90° ■	AR-S7490-060-260



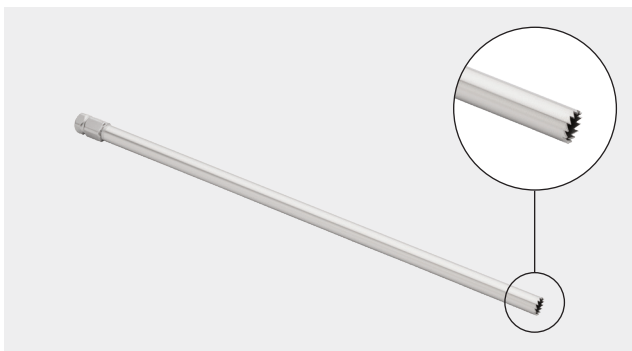
Rasps and Trephines



Product Description	Item Number
Trephine Handle	AR-S7700-000-000H



Product Description	Item Number
Rasp, 5.1 mm × 260 mm ■	AR-S7715-051-260
Rasp, 6.6 mm × 260 mm ■	AR-S7715-066-260
Rasp, 7.6 mm × 260 mm □	AR-S7715-076-260
Rasp, 8.8 mm × 260 mm ■	AR-S7715-088-260
Rasp, 5.1 mm × 260 mm, disposable ■	AR-S7715-051-260-S
Rasp, 6.6 mm × 260 mm, disposable ■	AR-S7715-066-260-S
Rasp, 7.6 mm × 260 mm, disposable □	AR-S7715-076-260-S
Rasp, 8.8 mm × 260 mm, disposable ■	AR-S7715-088-260-S



Product Description	Item Number
Trephine, 3.55 mm × 350 mm ■	AR-S7705-035-350
Trephine, 5.1 mm × 225 mm ■	AR-S7705-051-225
Trephine, 6.6 mm × 225 mm ■	AR-S7705-066-225
Trephine, 7.6 mm × 225 mm □	AR-S7705-076-225
Trephine, 3.55 mm × 350 mm, disposable ■	AR-S7705-035-350-S
Trephine, 5.1 mm × 225 mm, disposable ■	AR-S7705-051-225-S
Trephine, 6.6 mm × 225 mm, disposable ■	AR-S7705-066-225-S
Trephine, 7.6 mm × 225 mm, disposable □	AR-S7705-076-225-S



Product Description	Item Number
Trephine Protection Tube, 6 mm × 160 mm ■	AR-S7700-060-160
Trephine Protection Tube, 7.5 mm × 160 mm ■	AR-S7700-075-160
Trephine Protection Tube, 8.5 mm × 160 mm □	AR-S7700-085-160

Trephine/Rasp compatibility: ■ 3.55 mm ■ 5.1 mm ■ 6.6 mm □ 7.6 mm ■ 8.8 mm
 Scope compatibility guide: ■ 6.3 mm ■ 7 mm ■ 10 mm

Rod Pushers

Product Description	Item Number
Rod Pusher, 2.5 mm ■	AR-S6524-025-230P
Rod Pusher, 4 mm ■	AR-S6524-040-230P
Rod Pusher, 5 mm (a) 	AR-S6524-050-230P



Miscellaneous Instruments and Accessories



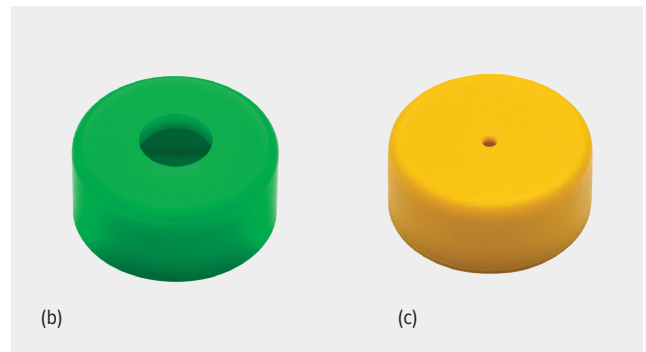
Product Description	Item Number
Mallet	AR-S4100-100-000



Product Description	Item Number
Spare Cap, endoscope, blue, 1 mm ■	AR-S3375-100-BLU
Spare Cap, endoscope, green, 1 mm ■	AR-S3375-100-GRE
Spare Cap, endoscope, yellow, 1 mm (c) ■	AR-S3375-100-YEL



Product Description	Item Number
Extracting Forceps	AR-S4100-200-100



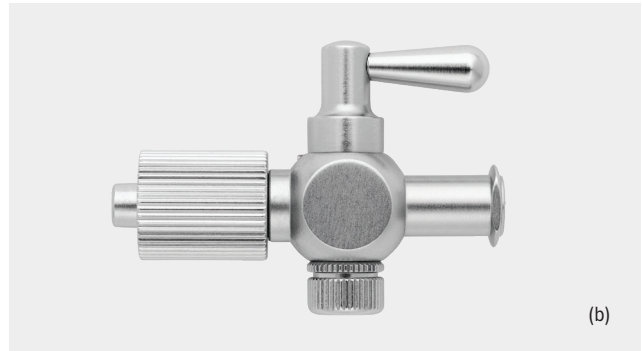
Product Description	Item Number
Spare Cap, cannula, blue, 2 mm (b) ■	AR-S3375-200-BLU
Spare Cap, cannula, green, 2 mm ■	AR-S3375-200-GRE
Spare Cap, cannula, blue, 3.75 mm ■	AR-S3375-375-BLU
Spare Cap, cannula, green, 3.75 mm ■	AR-S3375-375-GRE
Spare Cap, cannula, yellow, 3.75 mm ■	AR-S3375-375-YEL

Trephine/Rasp compatibility: ■ 5.1 mm ■ 6.6 mm 7.6 mm
 Scope compatibility guide: ■ 6.3 mm ■ 7 mm ■ 10 mm

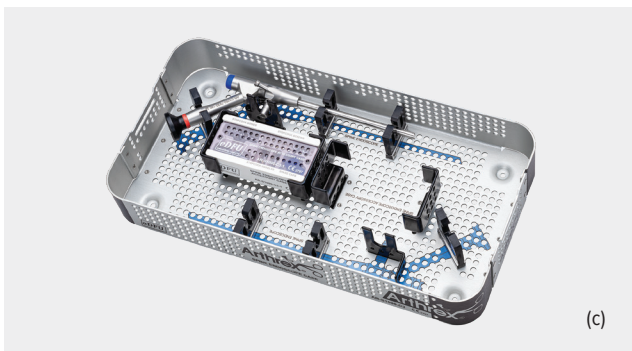
Miscellaneous Instruments and Accessories (Cont.)



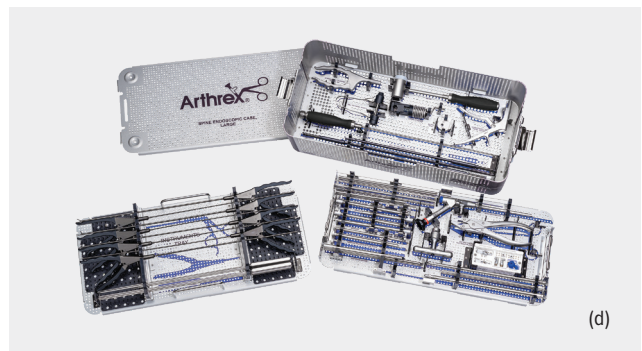
Product Description	Item Number
Rod Removal Forceps (a)	AR-S4100-200-200



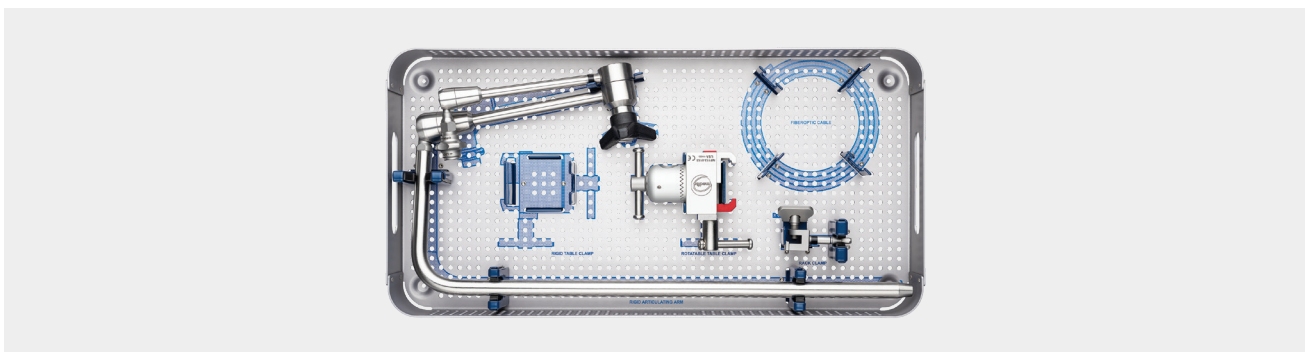
Product Description	Item Number
Stopcock (b)	AR-S3350-000-001



Product Description	Item Number
TRIMANO FORTIS® Support Arm	AR-1740
Cannula Holder	AR-S3420-CH
Spine Endoscope Depth Stop, 6.3 mm ■	AR-S3350-063-DS
Spine Endoscope Depth Stop, 7 mm ■	AR-S3350-070-DS
Spine Endoscope Depth Stop, 10 mm ■	AR-S3350-100-DS



Product Description	Item Number
Spine Endoscopic Case, large (d)	AR-S1000-C1
Spine Endoscopic Case, small	AR-S1000-C2
Spine Endoscope Case (c)	AR-S1000-C3
Spine Endoscope Accessory Case	AR-S1000-C3-1
Spine Endoscopic TRIMANO Arm Case	AR-S1000-C4



Product Description	Item Number
Spine Endoscopic TRIMANO Arm	AR-S1000-C4S*
Medfix® Rigid Arm, 400 mm length arm, L-column, w/ square QC	MF112-0150
Medfix Table Clamp for Rigid Arm, rotatable	MF112-0153
Medfix Rack Clamp, square QC fitting for rigid arm	MF112-0152
Medfix Vision Articulating Arm Set Insert	MFV-1000-INSERT
Spine Endoscopic TRIMANO Arm Case	AR-S1000-C4

*Includes all items listed below



Arthrex®
Curved Scorpion
Instrument Case
AR-13998CFC
eDFU
Arthrex®
AR-13998CFC CE 2797

Arthrex®
SPINE ENDOSCOPIC CASE
SMALL
eDFU
Arthrex®
SPINE ENDOSCOPIC CASE
SMALL
eDFU

Arthrex®
SPINE ENDOSCOPIC CASE
SMALL
eDFU

AURORA

AURORA

skytron GS

Endoscopic Approaches to the Spine and Recommended Sets

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Medial Branch Nerve Transection

Provide patients with a truly minimally invasive option for facet joint pain. The medial branch nerve transection (MBT) procedure uses an endoscopic approach to achieve longer lasting denervation of the medial nerves than radiofrequency ablation (RFA) procedures.¹⁻³

Performed in an outpatient setting, MBT shows fewer postoperative complications, less pain, and faster recovery times than traditional procedures.⁴

- Endoscopic approach is least-invasive option on the market
- May reduce OR time⁴
- Small incision (<1 cm) for less tissue dissection
- Ported cannulas provide working channels for instruments, including cameras and probes

- Visualization of full surgical field with spine-specific endoscope
- Ergonomic WishBone™ handle option available

Unparalleled Medical Education

Arthrex offers unsurpassed medical education for surgeons and facility staff, both onsite at our global headquarters in Naples, Florida, and through local support available across the US and internationally. Hands-on cadaveric labs with expert surgeons provide extensive instruction on endoscopic spine techniques through a defined curriculum pathway designed to address the endoscopic learning curve and support surgeons from technique adoption through incorporation into their practices.

Medial Branch Transection Set, Standard (AR-S1000-MBTS)

Product Description	Item Number	Page Number
Spine Endoscopic Case, small	AR-S1000-C2	51
Cannula w/ Elevator Tip, 7.5 mm × 125 mm ■	AR-S3420-075-125ET	17, 43
Spine Endoscope Accessory Case ■ ■ ■	AR-S7110-025-260	45
Elevator, 3 mm × 260 mm ■ ■ ■	AR-S1342-030-260	47
Kerrison/Ball Tip Probe, handle	AR-S7400-000-000H	47, 48
Ball Tip Probe, shaft, flexible, 330 mm	AR-S7400-035-330	47
Hook Probe, 2.5 mm × 260 mm ■ ■ ■	AR-S10030-025-260	47
Spine Endoscope, 6.3 mm × 130 mm, 30° ■	AR-S3350-6330-130	14
Switching Stick, 6.3 mm × 225 mm ■	AR-S3020-063-225	42
Scissor Punch, 2.5 mm × 260 mm ■ ■ ■	AR-S7116-025-260	44
Hook Scissors, 2.5 mm × 260 mm ■ ■ ■	AR-S7115-025-260	46

Scope compatibility guide: ■ 6.3 mm ■ 7 mm ■ 10 mm

Medial Branch Nerve Transection (Cont.)

Medial Branch Transection, Wishbone™ Handle (AR-S1000-MBT-4KWS)

Product Description	Item Number	Page Number
Spine Endoscopic Case, small	AR-S1000-C2	51
Cannula w/ Elevator Tip, 7.5 mm × 125 mm ■	AR-S3420-075-125ET	17, 43
Cup Forceps, 2.5 mm × 260 mm, WishBone handle ■ ■ ■	AR-S7110-025-260W	45
Elevator, 3 mm × 260 mm ■ ■ ■	AR-S1342-030-260	47
Kerrison/Ball Tip Probe, handle, WishBone handle	AR-S7400-000-000W	47, 48
Ball Tip Probe, shaft, flexible, 330 mm	AR-S7400-035-330	47
Hook Probe, 2.5 mm × 260 mm ■ ■ ■	AR-S10030-025-260	47
Spine Endoscope, 6.3 mm × 130 mm, 30° ■	AR-S3350-6330-130	14
Switching Stick, 6.3 mm × 225 mm ■	AR-S3020-063-225	42
Scissor Punch, 2.5 mm × 260 mm, WishBone handle ■ ■ ■	AR-S7116-025-260W	44
Hook Scissors, 2.5 mm × 260 mm, WishBone handle ■ ■ ■	AR-S7115-025-260W	46

References

1. Du T, Lu G, Li J, et al. Pain-free survival after endoscopic rhizotomy versus radiofrequency for lumbar facet joint pain: a real-world comparison study. *Pain Physician*. 2022;25(1):E87-E94.
2. Streitberger K, Müller T, Eichenberger U, Trelle S, Curatolo M. Factors determining the success of radiofrequency denervation in lumbar facet joint pain: a prospective study. *Eur Spine J*. 2011;20(12):2160-5. doi:10.1007/s00586-011-1891-6
3. Hayes V. Five year long-term results of endoscopic dorsal ramus rhizotomy and anatomic variations of the painful lumbar facet joint. Paper presented at: 2013 Society for Minimally Invasive Spine Surgery Annual Conference. Las Vegas, NV; November 2013.
4. Birkenmaier C, Komp M, Leu HF, Wegener B, Ruetten S. The current state of endoscopic disc surgery: review of controlled studies comparing full-endoscopic procedures for disc herniations to standard procedures. *Pain Physician*. 2013;16(4):335-344.

Interlaminar Approach to Discectomy

An interlaminar discectomy, through an endoscopically assisted approach, provides a familiar anatomical landscape for treating disc herniation and has advantages including improved patient-reported outcomes, reduced surgical trauma, and faster rehabilitation.¹

- Uses paramedian incision to access lamina and interlaminar space for disc removal

- High-definition visualization allows for targeted disc removal and repair while avoiding surrounding structures
- Small incision (<1 cm) for less tissue dissection
- Endoscopic decompression provides significant advantages, including improved patient outcomes and faster recovery²
- Ergonomic WishBone™ handle option available

Interlaminar Dissection Set, Standard (AR-S1000-ILS)

Product Description	Item Number	Page Number
Spine Endoscopic Case, large	AR-S1000-C1	51
Cannula, w/ Elevator Tip 8 mm x 125 mm ■	AR-S3420-080-125ET	17, 43
Cup Forceps, 2.5 mm x 260 mm ■ ■ ■	AR-S7110-025-260	45
Cup Forceps, 3.5 mm x 260 mm ■ ■ ■	AR-S7110-035-260	45
Cup Grasper, semi-flexible, 3 mm x 260 mm ■ ■ ■	AR-S7125-030F-260	46
Blakesley Forceps, 3.5 mm x 330 mm ■ ■ ■	AR-S7118-035-330	45
Scissor Punch, up angle, 2.5 mm x 330 mm ■ ■ ■	AR-S7116-025U-330	44
Scissor Punch, 2.5 mm x 260 mm ■ ■ ■	AR-S7116-025-260	44
Elevator, 2.5 mm x 310 mm ■ ■ ■	AR-S1342-025-310	47
Hook Probe, 2.5 mm x 310 mm ■ ■ ■	AR-S10030-025-310	47
Kerrison/Ball Tip Probe, handle, WishBone handle	AR-S7400-000-000W	47, 48
Ball Tip Probe, shaft, flexible, 330 mm	AR-S7400-035-330	47
Kerrison/Ball Tip Probe, handle	AR-S7400-000-000H	47, 48
Kerrison, 3.5 mm x 260 mm, 40° ■ ■ ■	AR-S7440-035-260	48
Kerrison, 4 mm x 260 mm, 40° ■ ■ ■	AR-S7440-040-260	48
Spine Endoscope, 7 mm x 130 mm, 30° ■	AR-S3350-7030-130	14
Switching Stick, 7 mm x 225 mm ■	AR-S3020-070-225	42

Scope compatibility guide: ■ 6.3 mm ■ 7 mm ■ 10 mm

Interlaminar Approach to Discectomy (Cont.)

Interlaminar Dissection Set, WishBone™ Handle (AR-S1000-IL-4KWS)

Product Description	Item Number	Page Number
Spine Endoscopic Case, large	AR-S1000-C1	51
Cannula, w/ Elevator Tip 8 mm x 125 mm ■	AR-S3420-080-125ET	17, 43
Cup Forceps, 2.5 mm x 260 mm, WishBone handle ■ ■ ■	AR-S7110-025-260W	45
Cup Forceps, 3.5 mm x 260 mm, WishBone handle ■ ■ ■	AR-S7110-035-260W	45
Cup Grasper, semi-flexible, 3 mm x 260 mm, WishBone handle ■ ■ ■	AR-S7125-030F-260W	46
Blakesley Forceps, 3.5 mm x 330 mm, WishBone handle ■ ■ ■	AR-S7118-035-330W	45
Scissor Punch, up angle, 2.5 mm x 330 mm, WishBone handle ■ ■ ■	AR-S7116-025U-330W	44
Scissor Punch, 2.5 mm x 260 mm, WishBone handle	AR-S7116-025-260W	44
Elevator, 2.5 mm x 310 mm ■ ■ ■	AR-S1342-025-310	47
Hook Probe, 2.5 mm x 310 mm ■ ■ ■	AR-S10030-025-310	47
Kerrison/Ball Tip Probe, handle, WishBone	AR-S7400-000-000W	47, 48
Ball Tip Probe, shaft, flexible, 330 mm	AR-S7400-035-330	47
Kerrison, 3.5 mm x 260 mm, 40° ■ ■ ■	AR-S7440-035-260	48
Kerrison, 4 mm x 260 mm, 40° ■ ■ ■	AR-S7440-040-260	48
Spine Endoscope, 7.3 mm x 130 mm, 30° ■	AR-S3350-7030-130	14
Switching Stick, 7 mm x 225 mm ■	AR-S3020-070-225	42

References

1. Ruetten S, Komp M, Merk H, Godolias G. Full-endoscopic interlaminar and transforaminal lumbar discectomy versus conventional microsurgical technique: a prospective, randomized, controlled study. *Spine (Phila Pa 1976)*. 2008;33(9):931-939. doi:10.1097/BRS.0b013e31816c8af7
2. Franco D, Mouchtouris N, Gonzalez GA, et al. A review of endoscopic spine surgery: decompression for radiculopathy. *Curr Pain Headache Rep*. 2022;26(3):183-191. doi:10.1007/s11916-022-01017-x

Transforaminal Endoscopic Discectomy

Transforaminal endoscopic discectomy is a minimally invasive technique used to treat disc herniations through an endoscopic-assisted surgical approach. This approach has advantages including improved patient-reported outcomes, reduced surgical trauma, and faster rehabilitation.¹

- Transforaminal approach through Kambin's triangle aims to preserve surrounding structures

- High-definition visualization allows for targeted disc removal and repair while avoiding important surrounding anatomic structures
- Small incision (<1 cm) to minimize tissue dissection
- Favorable long-term outcomes² and high patient-reported satisfaction levels³
- Ergonomic WishBone™ handle option available

Transforaminal Dissection, Standard (AR-S1000-TFS)

Product Description	Item Number	Page Number
Spine Endoscopic Case, large	AR-S1000-C1	51
Blakesley Forceps, 3.5 mm × 330 mm ■■■	AR-S7118-035-330	45
Cannula w/ Oblique Window, 8 mm × 178 mm ■	AR-S3420-080-178	17, 43
Cannula w/ Elevator Tip, 8 mm × 178 mm ■	AR-S3420-080-178ET	17, 43
Cup Forceps, 2.5 mm × 330 mm ■■■	AR-S7110-025-330	45
Cup Forceps, 3.5 mm × 330 mm ■■■	AR-S7110-035-330	45
Cup Forceps, up angle, 2.5 mm × 330 mm ■■■	AR-S7110-025U-330	45
Scissor Punch, 2.5 mm × 330 mm ■■■	AR-S7116-025-330	44
Cup Grasper, semi-flexible, 3 mm × 330 mm ■■■	AR-S7125-030F-330	46
Dilator, 2.5 mm × 230 mm	AR-S6524-025-230	41
Dilator, 4.1 mm × 185 mm	AR-S6524-041-185	41
Dilator, 5.1 mm × 170 mm	AR-S6524-051-170	41
Dilator, 6 mm × 160 mm ■	AR-S6524-060-160	41
Dilator, 7.1 mm × 185 mm ■	AR-S6524-071-185	41
Switching Stick, 7 mm × 225 mm ■	AR-S3020-070-225	42
Ball Tip Probe, shaft, flexible, 330 mm	AR-S7400-035-330	47
Extracting Forceps	AR-S4100-200-100	50
Rod Removal Forceps	AR-S4100-200-200	51
Mallet	AR-S4100-100-000	50
Hook Probe, 2.5 mm × 310 mm ■■■	AR-S10030-025-310	47
Kerrison/Ball Tip Probe, handle	AR-S7400-000-000H	47, 48
Kerrison, 2.5 mm × 360 mm, 40° ■■■	AR-S7440-025-360	48
Kerrison, 3.5 mm × 360 mm, 40° ■■■	AR-S7440-035-360	48
Kerrison, 4 mm × 360 mm, 40° ■■■	AR-S7440-040-360	48
Rod Pusher, 2.5 mm	AR-S6524-025-230P	50
Rod Pusher, 4 mm	AR-S6524-040-230P	50
Rod Pusher, 5 mm	AR-S6524-050-230P	50
Spine Endoscope, 7 mm × 181 mm, 30° ■	AR-S3350-7030-181	14
Trephine Handle	AR-S7700-000-000H	49
Trephine, 5.1 mm × 225 mm	AR-S7705-051-225	49
Trephine, 6.6 mm × 225 mm	AR-S7705-066-225	49
Trephine, 7.6 mm × 225 mm	AR-S7705-076-225	49

Scope compatibility guide: ■ 6.3 mm ■ 7 mm ■ 10 mm

Transforaminal Endoscopic Discectomy (Cont.)

Transforaminal Dissection Set, WishBone™ Handle (AR-S1000-TF-4KWS)

Product Description	Item Number	Page Number
Spine Endoscopic Case, large	AR-S1000-C1	51
Blakesley Forceps, 3.5 mm × 330 mm, WishBone handle ■■■	AR-S7118-035-330W	45
Cannula w/ Oblique Window, 8 mm × 178 mm ■	AR-S3420-080-178	17, 43
Cannula w/ Elevator Tip, 8 mm × 178 mm ■	AR-S3420-080-178ET	17, 43
Cup Forceps, 2.5 mm × 330 mm, WishBone handle ■■■	AR-S7110-025-330W	45
Cup Forceps, 3.5 mm × 330 mm, WishBone handle ■■■	AR-S7110-035-330W	45
Cup Forceps, up angle, 2.5 mm × 330 mm, WishBone handle ■■■	AR-S7110-025U-330W	45
Scissor Punch, 2.5 mm × 330 mm, WishBone handle ■■■	AR-S7116-025-330W	44
Cup Grasper, semi-flexible, 3 mm × 330 mm, WishBone handle ■■■	AR-S7125-030F-330W	46
Dilator, 2.5 mm × 230 mm	AR-S6524-025-230	42
Dilator, 4.1 mm × 185 mm	AR-S6524-041-185	41
Dilator, 5.1 mm × 170 mm	AR-S6524-051-170	41
Dilator, 6 mm × 160 mm ■	AR-S6524-060-160	41
Dilator, 7.1 mm × 185 mm ■	AR-S6524-071-185	41
Switching Stick, 7 mm × 225 mm ■	AR-S3020-070-225	42
Kerrison/Ball Tip Probe, WishBone handle	AR-S7400-000-000W	47, 48
Ball Tip Probe, shaft, flexible, 330 mm	AR-S7400-035-330	47
Extracting Forceps	AR-S4100-200-100	50
Rod Removal Forceps	AR-S4100-200-200	51
Mallet	AR-S4100-100-000	50
Hook Probe, 2.5 mm × 310 mm ■■■	AR-S10030-025-310	47
Kerrison, 2.5 mm × 360 mm, 40° ■■■	AR-S7440-025-360	48
Kerrison, 3.5 mm × 360 mm, 40° ■■■	AR-S7440-035-360	48
Kerrison, 4 mm × 360 mm, 40° ■■■	AR-S7440-040-360	48
Rod Pusher, 2.5 mm	AR-S6524-025-230P	50
Rod Pusher, 4 mm	AR-S6524-040-230P	50
Rod Pusher, 5 mm	AR-S6524-050-230P	50
Trephine Handle	AR-S7700-000-000H	49
Trephine, 5.1 mm × 225 mm	AR-S7705-051-225	49
Trephine, 6.6 mm × 225 mm	AR-S7705-066-225	49
Trephine, 7.6 mm × 225 mm	AR-S7705-076-225	49

References

- Ruetten S, Komp M, Merk H, Godolias G. Full-endoscopic interlaminar and transforaminal lumbar discectomy versus conventional microsurgical technique: a prospective, randomized, controlled study. *Spine (Phila Pa 1976)*. 2008;33(9):931-939. doi:10.1097/BRS.0b013e31816c8af7
- Ahn Y, Lee U, Kim WK, Keum HJ. Five-year outcomes and predictive factors of transforaminal full-endoscopic lumbar discectomy. *Medicine (Baltimore)*. 2018;97(48):e13454. doi:10.1097/MD.00000000000013454
- Hoogland T, van den Brekel-Dijkstra K, Schubert M, Miklitz B. Endoscopic transforaminal discectomy for recurrent lumbar disc herniation: a prospective, cohort evaluation of 262 consecutive cases. *Spine (Phila Pa 1976)*. 2008;33(9):973-978. doi:10.1097/BRS.0b013e31816c8ade

Transforaminal Endoscopic Stenosis

Endoscopic treatment of spinal stenosis is a safe and effective choice with advantages over open decompression, including minimal tissue damage,¹ less blood loss,^{1,2} and faster recovery and return to activity.²

- Requires less laminar and facet resection and dural sac retraction¹

- May be performed in an outpatient setting; if performed in a hospital setting, may shorten length of hospital stay^{1,2}
- Compared to conventional procedures, endoscopic decompression has been shown to have a quicker recovery, faster return to work, less postoperative medication use, and fewer wound complications¹

Stenosis Set, Standard (AR-S1000-STNS)

Product Description	Item Number	Page Number
Spine Endoscopic Case, large	AR-S1000-C1	51
Blakesley Forceps, 3.5 mm × 330 mm ■■■	AR-S7118-035-330	45
Cannula w/ Oblique Window, 11 mm × 134 mm ■	AR-S3420-110-134	17, 43
Cannula w/ Flat Tip, 11 mm × 134 mm ■	AR-S3420-110-134FT	17, 43
Cup Forceps, 3.5 mm × 260 mm ■■■	AR-S7110-035-260	45
Cup Forceps, 4 mm × 260 mm ■■	AR-S7110-040-260	45
Elevator, 3 mm × 260 mm ■■■	AR-S1342-030-260	47
Ball Tip Probe, shaft, flexible, 330 mm	AR-S7400-035-330	47
Hook Probe, 2.5 mm × 260 mm ■■■	AR-S10030-025-260	47
Kerrison/Ball Tip Probe, handle	AR-S7400-000-000H	47, 48
Kerrison, 3.5 mm × 260 mm, 40° ■■■	AR-S7440-035-260	48
Kerrison, 4 mm × 260 mm, 40° ■■	AR-S7440-040-260	48
Kerrison, 4 mm × 260 mm, 90° ■■	AR-S7490-040-260	48
Kerrison, 5 mm × 260 mm, 40° ■	AR-S7440-050-260	48
Kerrison, 5 mm × 260 mm, 90° ■	AR-S7490-050-260	48
Kerrison, 6 mm × 260 mm, 40° ■	AR-S7440-060-260	48
Kerrison, 6 mm × 260 mm, 90° ■	AR-S7490-060-260	48
Kerrison, up angle, 4 mm × 260 mm, 40° ■	AR-S7440-040U-260	48
Spine Endoscope, 10 mm × 139 mm, 15° ■	AR-S3350-1015-139	14
Switching Stick, 10 mm × 185 mm ■	AR-S3020-100-185	42

Scope compatibility guide: ■ 6.3 mm ■ 7 mm ■ 10 mm

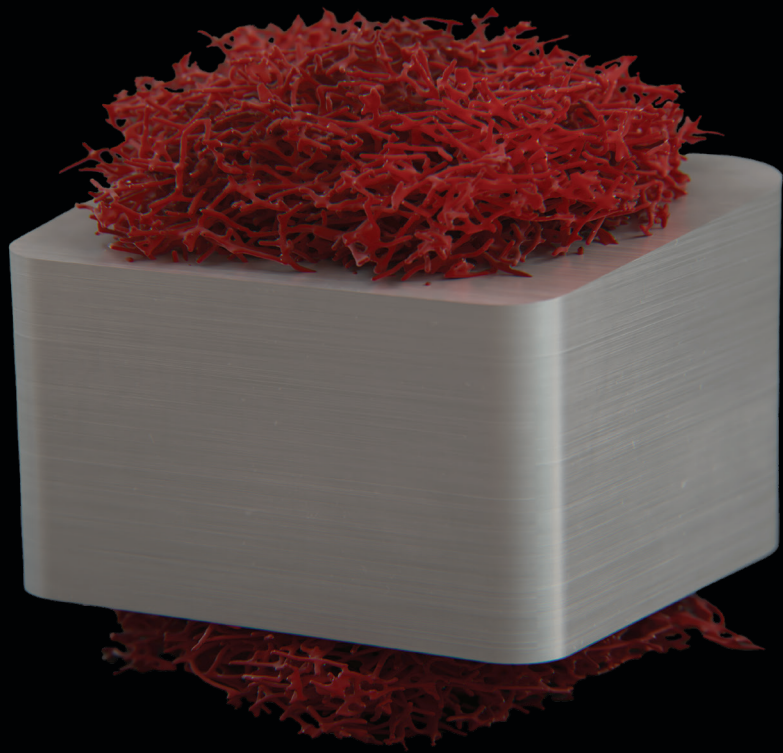
Transforaminal Endoscopic Stenosis (Cont.)

Stenosis Set, WishBone™ Handle (AR-S1000-STN-4KWS)

Product Description	Item Number	Page Number
Spine Endoscopic Case, large	AR-S1000-C1	51
Blakesley Forceps, 3.5 mm × 330 mm, WishBone handle ■■■	AR-S7118-035-330W	45
Cannula w/ Oblique Window, 11 mm × 134 mm ■	AR-S3420-110-134	17, 43
Cannula w/ Flat Tip, 11 mm × 134 mm ■	AR-S3420-110-134FT	17, 43
Cup Forceps, 3.5 mm × 260 mm, WishBone handle ■■■	AR-S7110-035-260W	45
Cup Forceps, 4 mm × 260 mm, WishBone handle ■■	AR-S7110-040-260W	45
Elevator, 3 mm × 260 mm ■■■	AR-S1342-030-260	47
Kerrison/Ball Tip Probe, WishBone handle	AR-S7400-000-000W	47, 48
Ball Tip Probe, shaft, flexible, 330 mm	AR-S7400-035-330	47
Hook Probe, 2.5 mm × 260 mm ■■■	AR-S10030-025-260	47
Kerrison, 3.5 mm × 260 mm, 40° ■■■	AR-S7440-035-260	48
Kerrison, 4 mm × 260 mm, 40° ■■	AR-S7440-040-260	48
Kerrison, 4 mm × 260 mm, 90° ■■	AR-S7490-040-260	48
Kerrison, 5 mm × 260 mm, 40° ■	AR-S7440-050-260	48
Kerrison, 5 mm × 260 mm, 90° ■	AR-S7490-050-260	48
Kerrison, 6 mm × 260 mm, 40° ■	AR-S7440-060-260	48
Kerrison, 6 mm × 260 mm, 90° ■	AR-S7490-060-260	48
Kerrison, up angle, 4 mm × 260 mm, 40° ■	AR-S7440-040U-260	48
Spine Endoscope, 10 mm × 139 mm, 15°	AR-S3550-1015-139	14
Switching Stick, 10 mm × 185 mm ■	AR-S3020-100-185	42

References

1. Ahn Y. Current techniques of endoscopic decompression in spine surgery. *Ann Transl Med.* 2019;7(Suppl 5):S169. doi:10.21037/atm.2019.07.98
2. Perez-Roman RJ, Gaztanaga W, Lu VM, Wang MY. Endoscopic decompression for the treatment of lumbar spinal stenosis: an updated systematic review and meta-analysis. *J Neurosurg Spine.* 2021;36(4):549-557. doi:10.3171/2021.8.SPINE21890



Bone Repair

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Viable Bone Matrix

ArthroCell allograft is a moldable cellular allogenic bone matrix intended for use in bone defects and remodeling for a variety of orthopedic applications.

- ArthroCell allograft is an HCT/P allogenic bone scaffold
- Final product is moldable for optimal handling (Figure 1)
- Cell viability and function are preserved using a novel cryoprotectant that is DMSO-free and does not require decanting prior to use
- Product shelf life is 2 years from date of processing when stored at -65 °C or colder
- Preparation time on back table is less than 20 minutes. ArthroCell allograft has a 4-hour working window for implantation after thaw without loss of cell viability.¹
- ArthroCell allograft is a nonimmunogenic alternative to autograft with a history of clinical safety
- Donors processed for ArthroCell allograft undergo rigorous screening, testing, and culturing that meet FDA and American Association of Tissue Banks (AATB) guidelines

ArthroCell allograft provides the essential elements for optimal bone repair

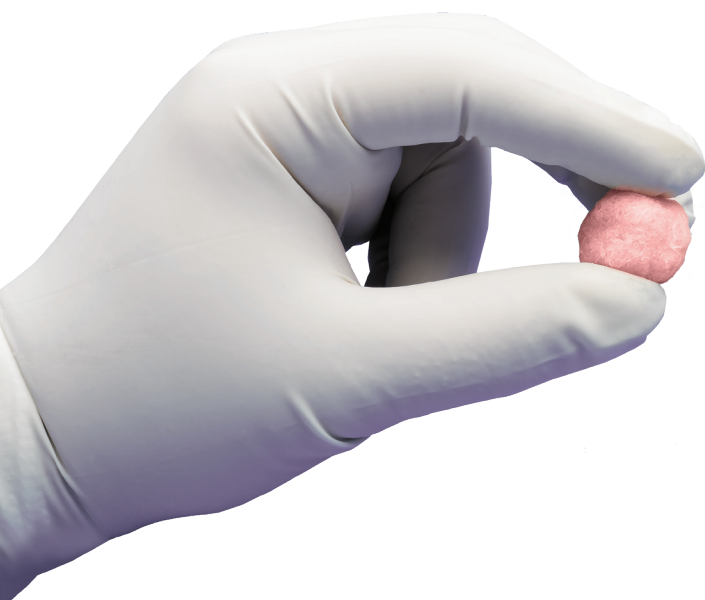
- An osteoconductive, 3-dimensional scaffold with cortical and cancellous components²
- A demineralized bone component with osteoinductive potential, which provides exposure of signaling molecules and bone morphogenetic proteins³
- Cells to support osteogenic healing processes⁴⁻⁶



Figure 1. ArthroCell allograft components.

Product Description	Item Number
ArthroCell Viable Bone Matrix, 2.5 cc	ABS-2009-02
ArthroCell Viable Bone Matrix, 5 cc	ABS-2009-05
Mixing Delivery Syringe, 14 cc	ABS-2000

The mixing syringe must be ordered for each graft size.



ArthroCell™ Viable Bone Matrices (Cont.)

Mesenchymal stem cells (MSCs) are a type of adult stem cell present in ArthroCell allograft that have the ability to self-renew and differentiate into bone, cartilage, fat, muscle, or tendon.⁷

- MSCs are the osteogenic cells required for bone repair, remodeling, and maturation
- MSCs can differentiate into osteoblasts that subsequently make new bone
- MSCs do not stimulate allogenic rejection and are not eliminated by the host immune system⁸



ArthroCell allograft cellular advantage

- Cellular component is recovered from donors aged 15 to 55 years, frozen, and packaged within 120 hours postmortem
- Cells are recovered from the vertebral body region, an area known to be rich in MSCs⁹
- Cells are preserved in a novel cryoprotectant to preserve cellular identity after thaw:
 - DMSO-free
 - Nontoxic
 - Decanting not required prior to use
- Additional cell population includes MSCs and osteoprogenitor cells. Flow cytometry analysis demonstrates high expression of SSEA-4, a marker for pluripotent cells and MSCs.⁹

Safety of ArthroCell™ Viable Bone Matrices

Donor tissue processing

- ArthroCell allograft is processed at Vivex Biomedical, Inc. in an aseptic manner in Class 100 clean rooms using proprietary procedures and screening criteria that meet the requirements of the AATB
- ArthroCell allograft is collected from donors who have been screened by licensed laboratories and physicians following a process that meets FDA and AATB requirements for testing
- Donor testing includes nucleic acid and/or antibody tests for the following pathogens:
 - HIV-1 and -2
 - Hepatitis B and C
 - Human T-lymphocyte virus
 - Syphilis rapid plasma screen
 - T. pallidum IgG screen
 - Cytomegalovirus (CMV) antibody (IgG and IgM)



Safety of ArthroCell™ Viable Bone Matrices (Cont.)

Donor screening

- Medical and social history review
- Physical examination
- Medical record evaluation, including autopsy (if performed)
- Licensed physician review of donor record
- Mixed lymphocyte reaction (MLR) assay:
 - MSCs are known to be immune-privileged cells that do not elicit an immune response.⁸ To ensure complete safety of the cell component, an MLR assay was performed to assess the potential for activation of T-cell proliferation on samples of ArthroCell allograft along with positive and negative controls.¹⁰
 - Stimulation indices for the test samples were near or below that for the negative control, while positive controls performed as expected and demonstrated a robust response. ArthroCell allograft therefore does not stimulate an immune response (Figure 2).

SI of PBMCs with UMTB® test MSCs from 3 donors (high and low)¹⁰

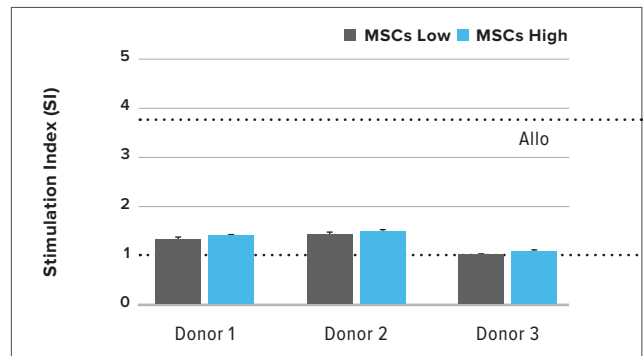


Figure 2. Stimulation index calculated from BrdU ELISA ABS450 relative to PBMCs. Dotted line at SI 3.84 represents response of positive 2-way allogeneic MLR response. Dotted line at 1.00 represents response of the negative control. Stimulation indices for test samples range from 1.02 to 1.35.

UMTB = University of Miami Tissue Bank

Peripheral blood mononuclear cells (PBMCs) only

ArthroCell Plus™ Viable Bone Matrix



ArthroCell Plus is a next-generation viable bone graft that extends our current offerings. It is delivered in a premixed syringe, with size offerings of 1 cc, 2.5 cc, 5 cc, and 10 cc. In addition to its composition, ArthroCell Plus grafts contain the same novel cryoprotectant as our current ArthroCell graft offering, providing a product with minimal preparation time.

Product Description	Item Number
ArthroCell Viable Bone Matrix, 2.5 cc	ABS-2009-02
ArthroCell Viable Bone Matrix, 5 cc	ABS-2009-05
ArthroCell Plus Allograft, 1 cc	ABS-2090-01
ArthroCell Plus Allograft, 2.5 cc	ABS-2090-02
ArthroCell Plus Allograft, 5 cc	ABS-2090-05
ArthroCell Plus Allograft, 10 cc	ABS-2090-10

References

1. ArthroCell. Directions for use (80-606). Vivex Biomedical.
2. Malinin TI, Carpenter EM, Temple HT. Particulate bone allograft incorporation in regeneration of osseous defects; importance of particle sizes. *Open Orthop J*. 2007;1:19-24. doi:10.2174/1874325000701010019
3. Gruskin E, Doll BA, Futrell FW, Schmitz JP, Hollinger JO. Demineralized bone matrix in bone repair: history and use. *Adv Drug Deliv Rev*. 2012;64(12):1063-1077. doi:10.1016/j.addr.2012.06.008
4. Risbud MV, Shapiro IM, Guttapalli A, et al. Osteogenic potential of adult human stem cells of the lumbar vertebral body and the iliac crest. *Spine*. 2006;31(1):83-89.
5. D'Ippolito G, Schiller PC, Ricordi C, Roos BA, Howard GA. Age related osteogenic potential of mesenchymal stromal stem cell from human vertebral bone marrow. *J Bone Miner Res*. 1999;14(7):1115-1122. doi:10.1359/jbmr.1999.14.7.1115
6. D'Ippolito G, Diabira S, Howard GA, Menei P, Roos BA, Schiller PC. Marrow-isolated adult multilineage inducible (MIAMI) cells, a unique population of post-natal young and old human cells with extensive expansion and differentiation potential. *J Cell Sci*. 2004;117(14):2971-2981. doi:10.1242/jcs.01103
7. Grabowski G, Robertson RN. Bone allograft with mesenchymal stem cells: a critical review of the literature. *Hard Tissue*. 2013;2(2):22.
8. Ryan J, Barry F, Murphy J, Mahon B. Mesenchymal stem cells avoid allogeneic rejection. *J Inflamm*. 2005;2:8. doi:10.1186/1476-9255-2-8
9. McLain RF, Fleming JE, Boehm CA, Muschler GF. Aspiration of osteoprogenitor cells for augmenting spinal fusion: comparison of progenitor cell concentrations from the vertebral body and iliac crest. *J Bone Joint Surg*. 2005;87-A(12):2655-2661. doi:10.2106/JBJS.E.00230
10. Vivex Biomedical, Inc. Data on file. Miami, FL.



AlloSync™ Expand Demineralized Cortical Fibers



Features and Benefits

- Comprised of 100% demineralized cortical bone fibers
- Provides a scaffold for cellular attachment and proliferation
- Graft will expand and improve fill during hydration
- Sterile to device-grade standards (10^{-6} SAL)
- Ambient temperature storage

The unique geometry of AlloSync Expand fibers is ideal for intraoperative handling and controlled expansion into bone voids. AlloSync Expand fibers come preloaded in a syringe that allows for consistent hydration of the graft with biologic fluids, such as bone marrow aspirate (BMA).

100% Demineralized Bone Fibers

- No added fillers for maximum demineralized bone content and osteoinductive potential
- Specific fiber geometry provides exceptional handling and controlled expansion
- Lyophilized fibers extend shelf life while preserving the osteoinductive potential

Expands to Fill Gaps

- Wicks blood, bone marrow, and other physiological fluids that allow the graft to expand and improve fill

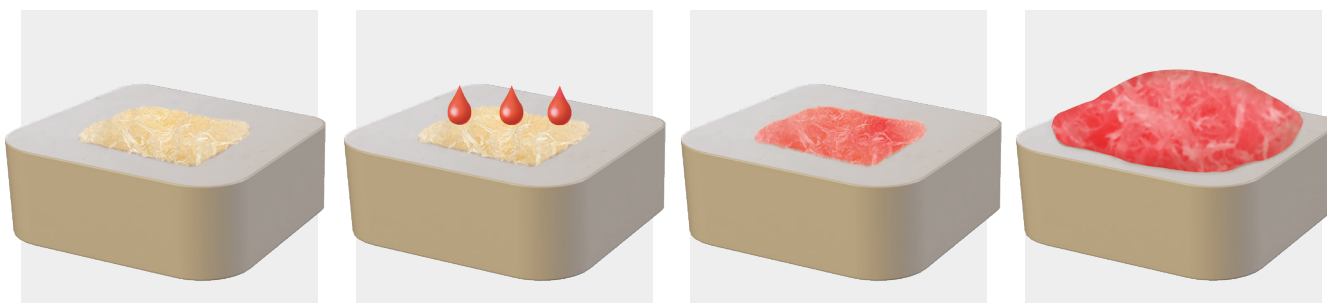
Cellular Highways

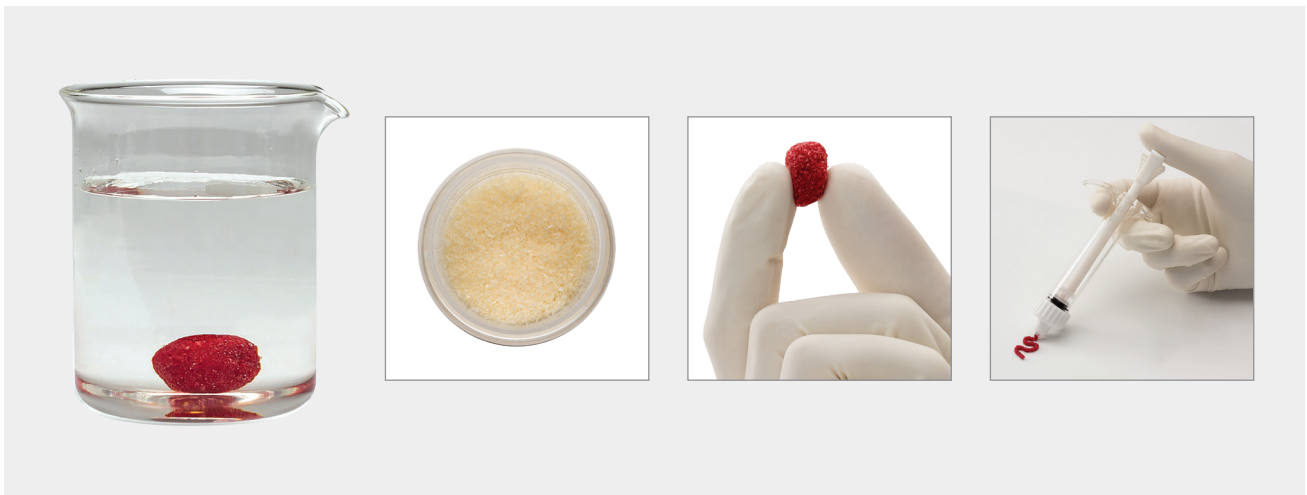
- Fibers have demonstrated superior bone-forming capacity compared to standard particulate demineralized bone¹
- Entangled fibers create a 3D interconnected matrix to promote cell migration and fusion

Simplicity of Hydration

- Luer lock portal delivers a simple yet thorough hydration process
- Flexibility to select various hydration fluids

Product Description	Item Number
AlloSync Expand Fibers, 1 cc	ABS-2017-01
AlloSync Expand Fibers, 2.5 cc	ABS-2017-02
AlloSync Expand Fibers, 5 cc	ABS-2017-05
AlloSync Expand Fibers, 10 cc	ABS-2017-10



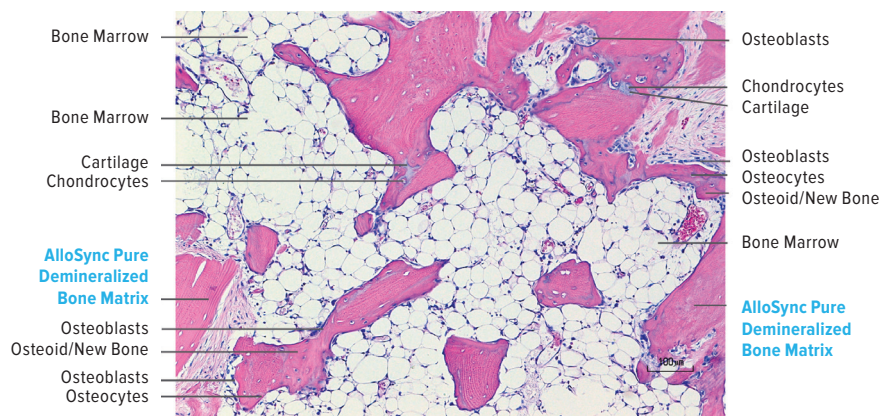


AlloSync Pure osteoinductive demineralized bone matrix (DBM) is derived from 100% human allograft bone with no extrinsic carriers. When prepared, AlloSync Pure DBM resists irrigation and can be used in a fluid environment. The clinician can control the handling properties of AlloSync Pure bone matrix, which includes decreasing the viscosity for injectable applications or increasing the viscosity to add autograft and/or allograft. The proprietary rice-shape fiber technology used to process AlloSync Pure bone matrix increases the osteoinduction and osteoconductive surface area to accelerate cellular ingrowth.¹

Features and Benefits

- Derived from 100% human allograft bone without any extrinsic carriers
- Post-sterilization, every lot is tested in vivo to ensure osteoinductivity

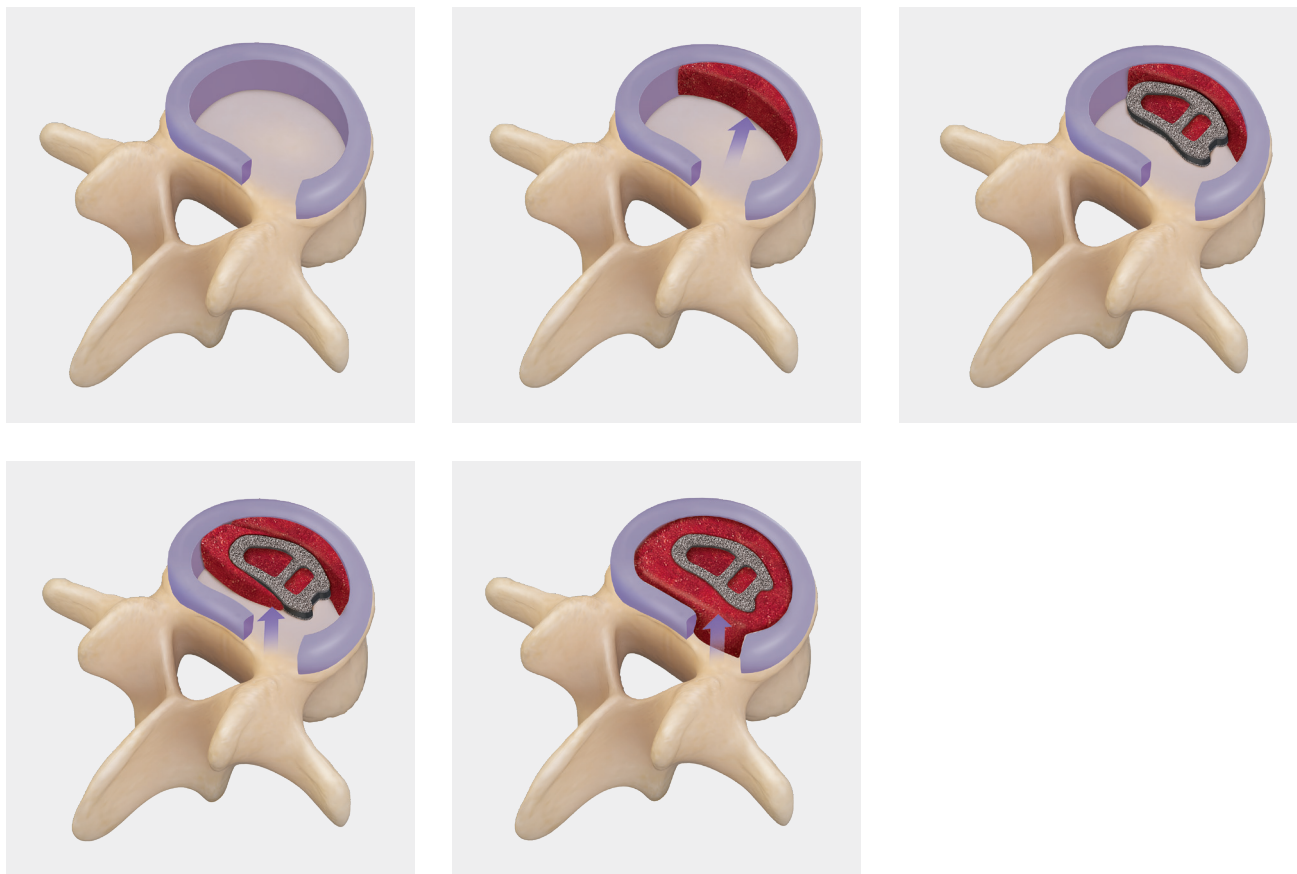
- Demineralization process preserves native bone morphogenetic proteins (BMPs) and growth factors
- Resists irrigation
- Histologically proven to contain all five elements of bone formation, including new bone, bone marrow, osteocytes, chondrocytes, and cartilage postimplantation at 28 days²
- May be hydrated with BMA, platelet-rich plasma (PRP), blood, saline, or other cellular components
- Sterile to device grade standards (10^{-6}) and stored at ambient temperature
- Provided in a ready-to-use mixing jar
- 5-year shelf life



AlloSync Pure DBM histology

AlloSync™ Pure Demineralized Bone Matrix (Cont.)

AlloSync Pure demineralized bone matrix is ideal for uses in an aqueous environment, such as during endoscopic fusion.



Product Description	Item Number
AlloSync Pure DBM, 1 cc	ABS-2010-01
AlloSync Pure DBM, 2.5 cc	ABS-2010-02
AlloSync Pure DBM, 5 cc	ABS-2010-05
AlloSync Pure DBM, 10 cc	ABS-2010-10

AlloSync gel, putty, and paste provide customizable consistencies



Comparison of Two DBMs



RPM Carrier

Glycerol Carrier

AlloSync Bone Products May Provide Osteoinductive and Osteoconductive Properties

- Osteoinduction—signaling molecules such as bone morphogenetic proteins (BMPs) that aid in cell differentiation down osteoblastic pathways
- Osteoconduction—scaffolding from DBM particles for osteoblasts to form new bone
- Every lot of DBM is tested for osteoinductive potential, using either an in vitro assay or in vivo model
- Additional scaffolding properties are provided with the addition of cancellous bone chips

Superior Handling Characteristics via the Reverse-Phase Medium (RPM) Carrier

- RPM is an inert, biocompatible copolymer consisting of polypropylene oxide and polyethylene oxide
- Material is flowable at room temperature and thickens to become more viscous at body temperature
- RPM allows the DBM graft to be moldable and packed into any defect size or shape
- AlloSync bone products will resist irrigation and can be used in a fluid environment without the fear of graft migration, unlike some other DBMs

AlloSync Bone Products Offer Ease of Use and Terminal Sterility

- Provided as a ready-to-use, off-the-shelf product that requires no thawing or premixing preparation
- Terminal sterilization using electron beam results in a sterility assurance level (SAL) of 10^{-6} ; process is not harmful to the DBM or its bioactivity
- Room-temperature storage

Product Description	Item Number
AlloSync DBM Putty	
Putty, 1 cc	ABS-2012-01
Putty, 2.55 cc	ABS-2012-02
Putty, 5 cc	ABS-2012-05
Putty, 10 cc	ABS-2012-10
AlloSync DBM Gel	
Gel, 1 cc	ABS-2013-01
Gel, 5 cc	ABS-2013-05
Gel, 10 cc	ABS-2013-10
AlloSync CB DBM Putty	
Putty, 5 cc	ABS-2014-05
Putty, 10 cc	ABS-2014-10
AlloSync CB DBM Paste	
Paste, 1 cc	ABS-2015-01
Paste, 3 cc	ABS-2015-03
Paste, 8 cc	ABS-2015-08

Promoting Bone Regeneration³

An AlloSync DBM equivalent product (same DBM/RPM ratio) was evaluated in a skeletally mature sheep model. Species-specific DBM was compared to an empty control and autograft. Transcortical defect holes were created in the tibial and metatarsal diaphysis; histology was assessed at 4, 8, and 16 weeks for bone regeneration and graft incorporation. Bone formation was either delayed or unable to bridge the gap within the empty control. The AlloSync equivalent product was able to provide a scaffold and induce osseous bridging across the defect site similar to autograft. This study indicates that AlloSync allograft bone is an effective bone grafting material.

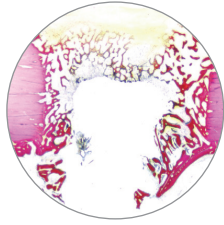
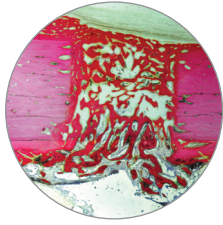
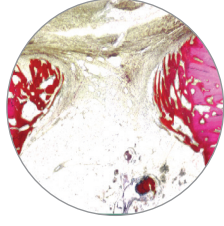
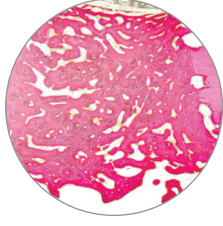
	Empty Control	AlloSync Equivalent Product
4 Weeks		
8 Weeks		

Figure 3.

AlloSync™ Demineralized Cancellous Sponges, Chips, and Cortical Fibers

Cancellous Sponges

- Post-sterilization, every lot is tested in vivo to ensure osteoinductivity
- Demineralized cancellous matrix is comprised of 100% cancellous bone
- Maintains natural bone architecture with interconnected porosity
- Provides optimal scaffold for cellular attachment and proliferation
- Contains exposed natural growth factors with verified osteoinductivity
- Naturally absorbs and retains bioactive fluids like PRP and concentrated BMA
 - After rehydration, the product is compressible like a sponge, allowing for flexibility to fit in and around different types of bone defects

Osteoinductivity Testing²

- The AlloSync demineralized sponge was tested in an intramuscular nude rat bioassay via histological evaluations
- After 28 days, the following findings were observed within the AlloSync demineralized sponge group (Figure 4):
 - The porous osteoconductive trabecular bone structure of the implant was maintained and found to be evident within the histological sections
 - Osteoblast-like cells were found lining the trabecular bone network
 - Cellular infiltration and neovascularization were apparent along the edges of the implant but also could be observed throughout the interior portion of the implant



Features and Benefits

- New form of 100% DBM offering excellent handling characteristics without the need for an additional carrier
- Osteoconductive and verified osteoinductive properties
 - Demineralized cortical fibers provide an optimal scaffold for cellular attachment and proliferation
- Customizable hydration: naturally wicks up bioactive fluids such as PRP and BMA
 - Sterile to device-grade standards (10^{-6}) and stored at ambient temperature

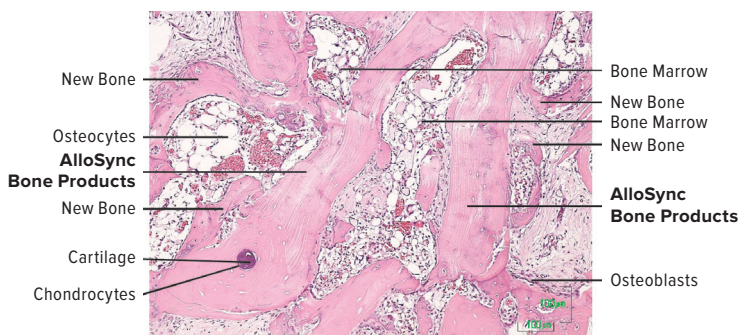


Figure 4. Shows AlloSync sponge histology with all five components of bone growth.

ALLOSYNC

AlloSync™ Cancellous Chips, Cubes, and Cancellous Crush



AlloSync cancellous cubes, chips, and cancellous crush provide an osteoconductive scaffold for bone ingrowth and allow for remodeling with the patient's own bone. AlloSync cancellous bone grafts are available in multiple sizes and quantities.

Product Description	Item Number
AlloSync Cancellous Cubes	
AlloSync Cancellous Cube, 15 cc	ABS-2900-15
AlloSync Cancellous Cube, 30 cc	ABS-2900-30
AlloSync Cancellous Chips	
AlloSync Cancellous Chips (1 mm-4 mm), 5 cc	ABS-2901-05
AlloSync Cancellous Chips (1 mm-4 mm), 15 cc	ABS-2901-15
AlloSync Cancellous Chips (1 mm-4 mm), 30 cc	ABS-2901-30
AlloSync Cancellous Chips (4 mm-10 mm), 5 cc	ABS-2910-05
AlloSync Cancellous Chips (4 mm-10 mm), 15 cc	ABS-2910-15
AlloSync Cancellous Chips (4 mm-10 mm), 30 cc	ABS-2910-30
AlloSync Cancellous Crush	
AlloSync Cancellous Crush, 5 cc	ABS-2905-05

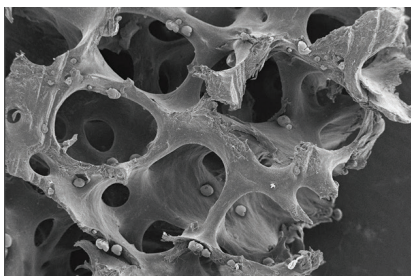
References

1. Martin GJ, Boden SD, Titus L, Scarborough NL. New formulations of demineralized bone matrix as a more effective graft alternative in experimental posterolateral lumbar spine arthrodesis. *Spine*. 1999;24(7):637-645. doi:10.1097/00007632-199904010-00005
2. CellRight Technologies, LLC. Data on file (ConCelltrate® 100 histology and in-vitro alkaline phosphate induction assay). Universal City, TX; 2017.
3. Arthrex, Inc. LA1-000006-en-US_A. Naples, FL; 2019.

BioSurge™ Cell and Bone Graft Processing System



The BioSurge system combines the superior matrices of the AlloSync™ bone grafting solutions line with the Angel® system's proprietary technology to prepare cPRP from BMA. Hydrated AlloSync bone grafts provide the optimal scaffold for cPRP from BMA, which is a rich source of platelets and nucleated progenitor cells.



Electron microscopy image showing several healthy cells attached to the AlloSync bone graft scaffold after hydration.



Hydrated AlloSync bone graft with Angel cPRP from BMA.



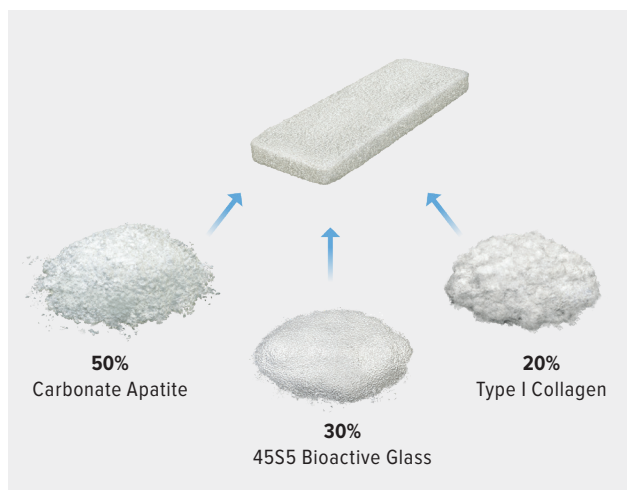
BioSurge system includes AlloSync and Angel system components.

Product Description	Item Number
BioSurge I System, 2.5 cc AlloSync Pure DBM w/ Angel cPRP and BMA tray	ABS-2016-01
BioSurge II System, 5 cc AlloSync Pure DBM w/ Arthrex Angel cPRP and BMA tray	ABS-2016-02
BioSurge IV System, 5 cc AlloSync DBM cortical fibers w/ Angel System	ABS-2016-04
BioSurge III System, 15 mm × 40 mm × 3 mm AlloSync DBM cancellous strip w/ Angel cPRP and BMA tray	ABS-2016-03
BioSurge V System, 12 mm × 3 mm AlloSync button disc w/ Angel cPRP and BMA tray	ABS-2016-05

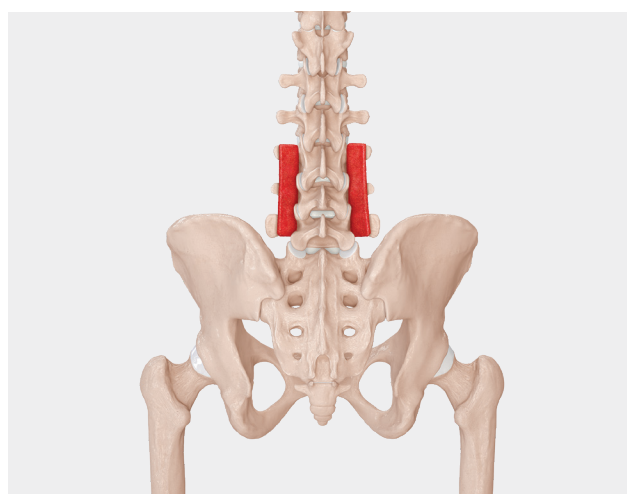
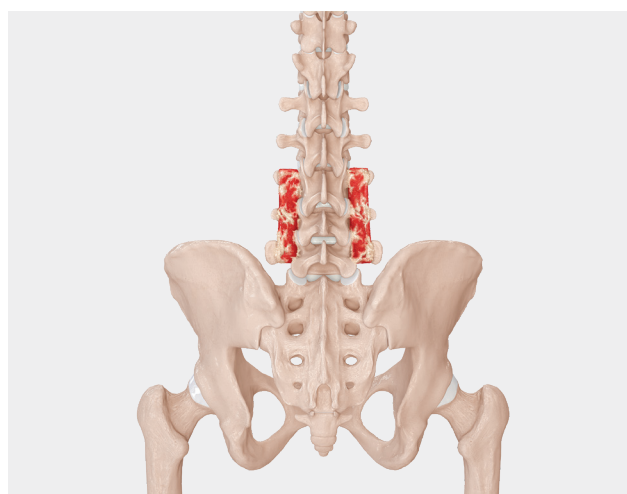
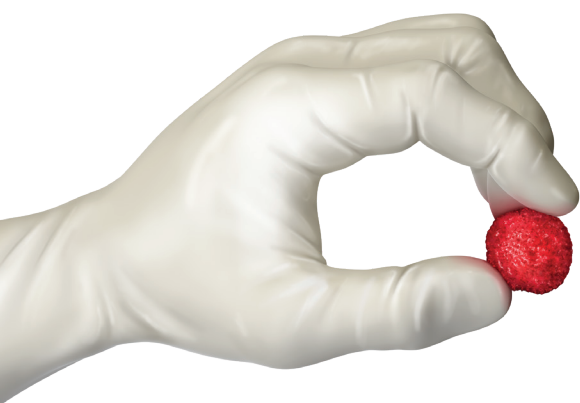
BoneSync™ BioActive Synthetic Bone Void Filler

BoneSync BioActive is a second-generation bone void filler that includes 45S5 bioglass and provides an osteoconductive and osteostimulative matrix.¹

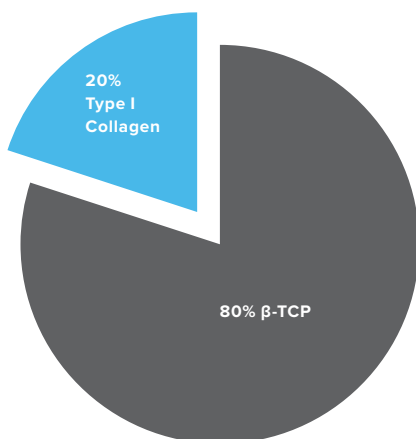
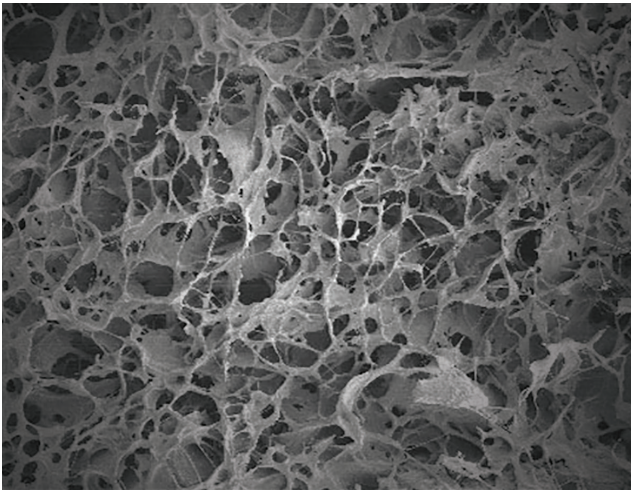
- Unique Composition:** BoneSync BioActive bone void filler consists of carbonate apatite anorganic bone mineral, 45S5 bioactive glass, and type I collagen. It is developed to resemble the composition and pore structure of natural human bone.^{2,3}
- Moldable Advantage:** BoneSync BioActive filler is available in putty and strip versions to fit various application needs, as the graft can be combined with either autogenous bone marrow or autograft bone mixed with saline.



Product Description	Item Number
Strip	
BoneSync BioActive Matrix Strip, 5 cc	ABS-3500-05
BoneSync BioActive Matrix Strip, 10 cc	ABS-3500-10
BoneSync BioActive Matrix Strip, 20 cc	ABS-3500-20
BoneSync BioActive Matrix Strip, 40 cc	ABS-3500-40
Putty	
BoneSync BioActive Matrix Putty, 2.5 cc	ABS-3400-02
BoneSync BioActive Matrix Putty, 5 cc	ABS-3400-05
BoneSync BioActive Matrix Putty, 10 cc	ABS-3400-10
BoneSync BioActive Matrix Putty, 20 cc	ABS-3400-20



BONESYNC
BIOACTIVE



Advanced Engineering

The blend of 20% type I collagen and 80% highly purified beta-tricalcium phosphate (β-TCP) in BoneSync putty and strips provides an osteoconductive material for bone regeneration. It was developed to resemble the composition and pore structure of natural human bone.⁴

Engineered Collagen Matrix

Capitalizing on more than 20 years of development expertise, with collagen technologies that have been used in more than 10 million patients, the source of collagen found in BoneSync bone void filler is specifically engineered to optimize safety, handling, and performance. The scaffold in BoneSync putty and strips, processed from purified type I collagen, is a critical design element that allows for rapid fluid imbibition, cellular ingrowth, and controlled resorption.

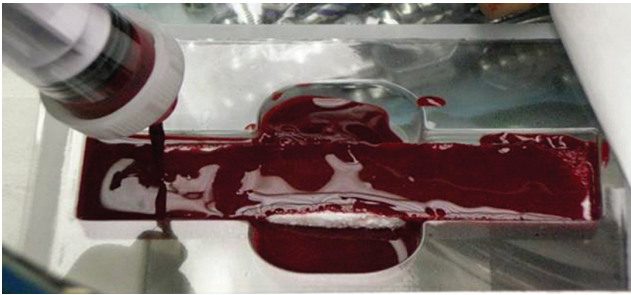
Highly Purified β-TCP

The highly purified β-TCP component of the BoneSync putty and strips is designed for a resorption profile consistent with bone formation. The porous architecture is specifically engineered for osteoconductivity.¹

Benefits of the Collagen-Engineered Matrix in Orthopedic Applications

- Specifically engineered to provide a scaffold with a porosity resembling natural bone
- Facilitates incorporation of cells in BMA and tissue cells during the healing process⁵
- The highly purified type I collagen in BoneSync bone void filler is the most abundant type of collagen found in bone
- Purification and biocompatibility minimize the potential for immune response

BoneSync™ Putty and Strips (Cont.)



Fluid Retention

With an interconnected pore structure engineered for absorbing fluids, BoneSync putty and strips effectively retain BMA within the material.

Cell Binding

Higher densities of collagen provide greater protein-binding sites and have been associated with more effective incorporation of bioactive proteins.¹

The collagen in BoneSync putty and strips facilitates the binding of bone-forming cells and proteins.

Diverse Configurations

BoneSync filler is offered in both putty and strip configurations to meet varying application needs and preferences. Each configuration benefits from purified biomaterials and advanced engineering while offering unique advantages to the surgeon.



Strip

Compression-resistant matrix combines the cell-binding benefits of cross-linked type I collagen with the volume and radiopacity of highly purified β -TCP granules.¹

Configuration Benefits

- Excellent carrier for BMA
- Bends to conform to uneven surfaces
- Maintains postoperative graft volume



Putty

Moldable putty has the cell-binding benefits of type I collagen and the volume and radiopacity of highly purified β -TCP granules.

Configuration Benefits

- Versatile with excellent handling
- Optimal for placement in irregularly shaped defects

BONESYNC

BoneSync™ Putty and Strips (Cont.)

Compression Resistance

The framework of β -TCP and cross-linked type I collagen in BoneSync putty and strips resists compression and maintains the structure of the material.⁵ This configuration has fixed dimensions but is also flexible, conforming to uneven surfaces, for various applications in the skeletal system.

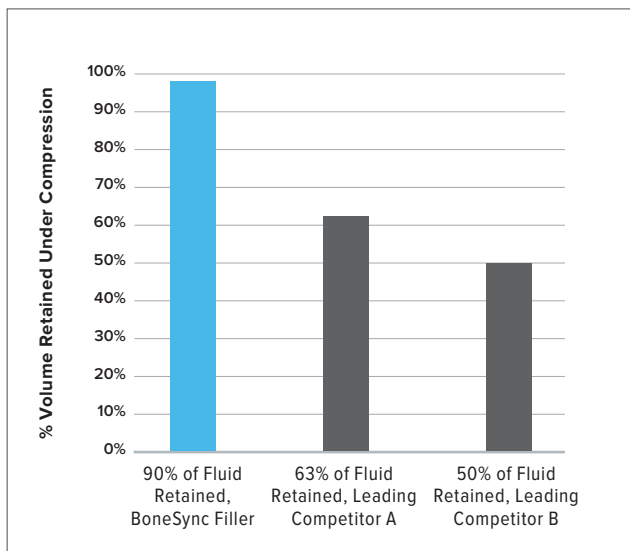


- Retains BMA within the matrix, facilitating bone fusion
- Maintains graft volume under compression

Compression-Resistant Matrix

A matrix with compression resistance has an increased ability to retain BMA and its active cells.

Fluid Retention Under Compression⁶

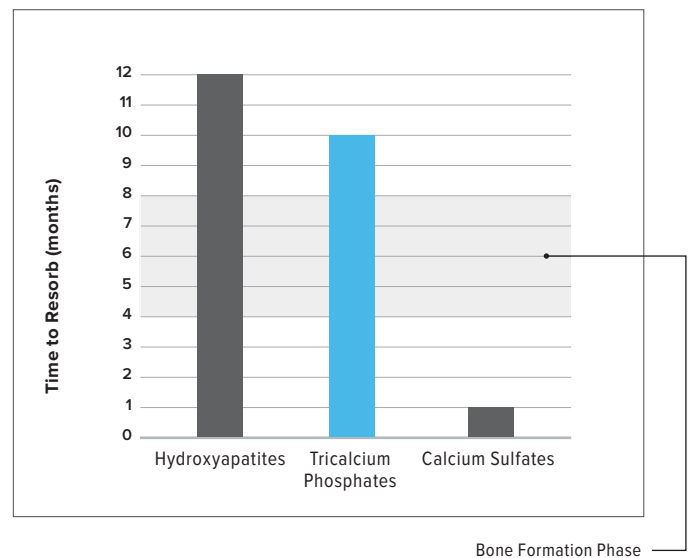


Resorption Profile Consistent With the Formation of New Bone

The residence time of an osteoconductive strip is a crucial factor for bone healing. A relatively short resorption profile often results in limited or weak bone growth, while longer residence time often results in ineffective tissue incorporation.

The composition and microarchitecture of the β -TCP component of BoneSync putty and strips is engineered to support the replacement of the graft material by new bone.⁷

β -TCP vs Competing Graft Components⁷



BoneSync™ Putty and Strips

Product Description	Item Number
BoneSync Putty	
Putty, 2.5 cc	ABS-3202
Putty, 5 cc	ABS-3205
Putty, 10 cc	ABS-3210
Putty, 15 cc	ABS-3215
BoneSync Strips	
Strip, 10 cc	ABS-3310
Strip, 15 cc	ABS-3315

BONESYNC

Clinical Evidence

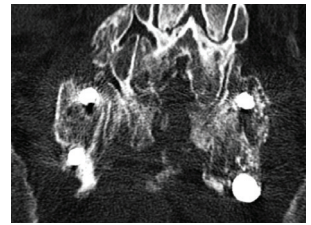
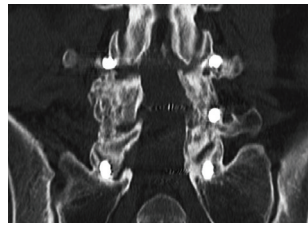
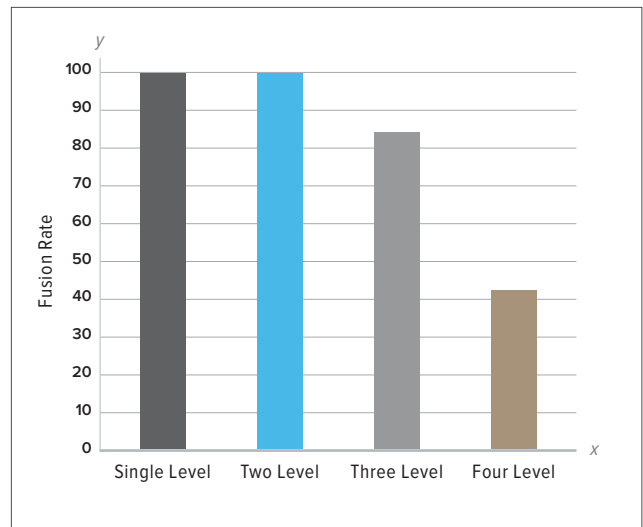
A BoneSync equivalent osteoconductive scaffold demonstrated fusion rate that was equivalent to autograft in a retrospective study on posterolateral lumbar fusion. This clinical study found 100% fusion in all single- and two-level lumbar spine fusion procedures, with an overall fusion rate of 90%. No significant differences were observed for the fusion scores in patients that received putty versus strip.⁴

- Fusion rates for BoneSync equivalent scaffold were equivalent to autograft
- In cases of successful fusion, definitive, uninterrupted bridging of well-mineralized trabecular bone observed 12 months after surgery, as determined by an independent radiologist blinded to treatment
- BoneSync equivalent scaffold applied as indicated with BMA alone, no addition of autograft or allograft
- Spinal fusion comparisons performed in each patient individually; the BoneSync equivalent scaffold applied to the symptomatic side and autograft to the contralateral side

Clinical Performance – 90% Overall Fusion⁴

Fusion rates were equivalent to autograft, including the ability to achieve fusion in 100% of single- and two-level procedures.

Fusion Rates in Multilevel Procedures⁴

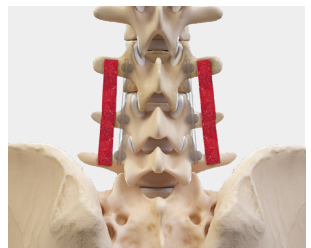


Representative radiographs from the referenced study.⁴ CT scans from two patients at 12 months post-op.

Diverse Configurations

The β -TCP component of BoneSync filler is engineered with a porosity level that balances radiopacity, residence time, and structure. An extremely porous graft material will likely limit radiopacity and structure, while an extremely dense material will likely limit graft incorporation into natural tissue.

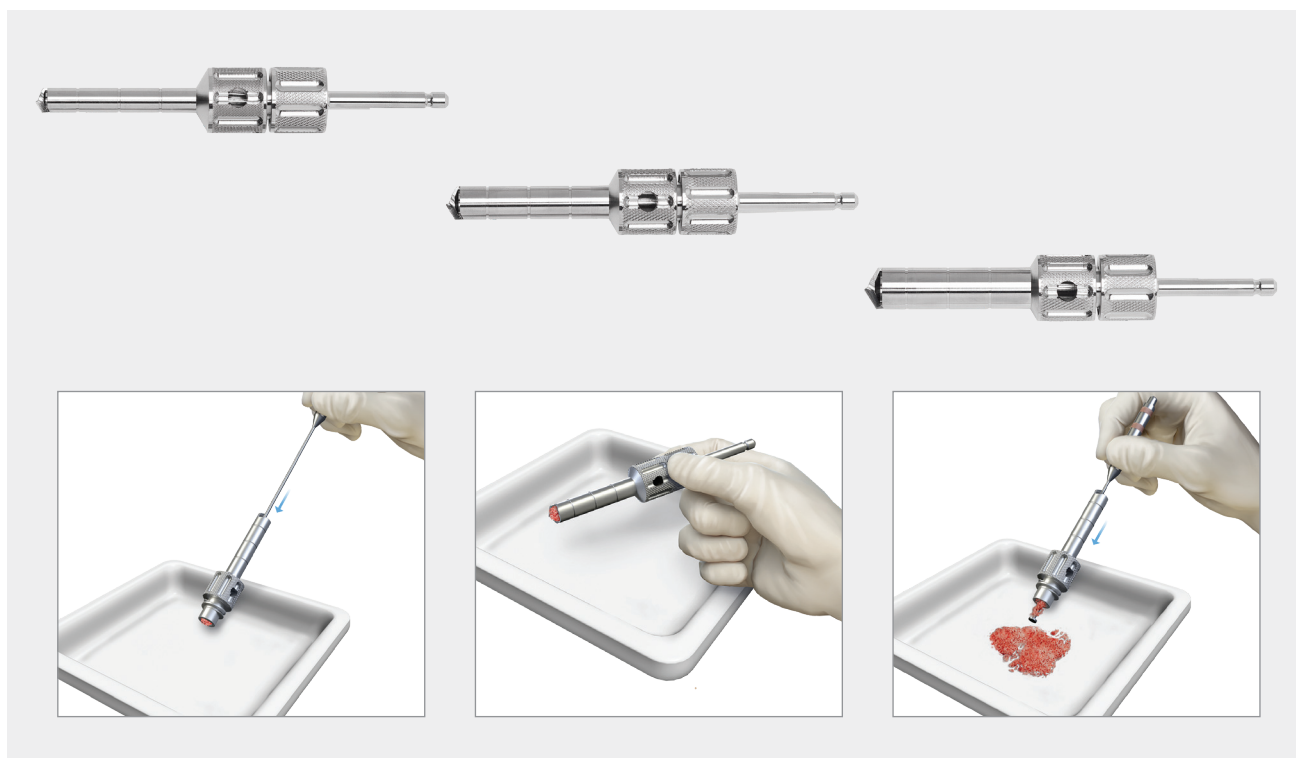
- Provides radiographic visualization of graft placement
- Indicates active resorption during healing



References

1. Hench LL, Polak JM, Xynos ID, Buttery LDK. Bioactive materials to control cell cycle. *Mater Res Innov.* 2000;3(6):313-323. doi:10.1007/s100190000055
2. Matsuura A, Kubo T, Doi K, et al. Bone formation ability of carbonate apatite-collagen scaffolds with different carbonate contents. *Dent Mater J.* 2009;28(2):234-242. doi:10.4012/dmj.28.234
3. Ellies LG, Carter JM, Natiella JR, Featherstone JD, Nelson DG. Quantitative analysis of early in vivo tissue response to synthetic apatite implants. *J Biomed Mater Res.* 1988;22(2):137-148. doi:10.1002/jbm.820220206
4. Mataragas, N. Data on file (Radiographic analysis of fusion success with Integra collagen ceramic matrix, as compared to autograft use, in posterolateral lumbar spine arthrodesis). Integra Life Sciences Corp. Princeton, NJ; 2010.
5. Geiger M, Li RH, Friess W. Collagen sponges for bone regeneration with rhBMP-2. *Adv Drug Deliv Rev.* 2003;55:1613-1629.
6. SeaSpine. Data on file. Carlsbad, CA.
7. SeaSpine. Data on file. Carlsbad, CA.

OsteoAuger™ Bone Graft Harvesting System



The OsteoAuger bone graft harvesting system allows for the quick and efficient recovery of morselized autogenous bone graft. Its simple design uses two separate compartments for the drill and morselized bone. This user-friendly design makes harvesting and reimplantation faster and more convenient.

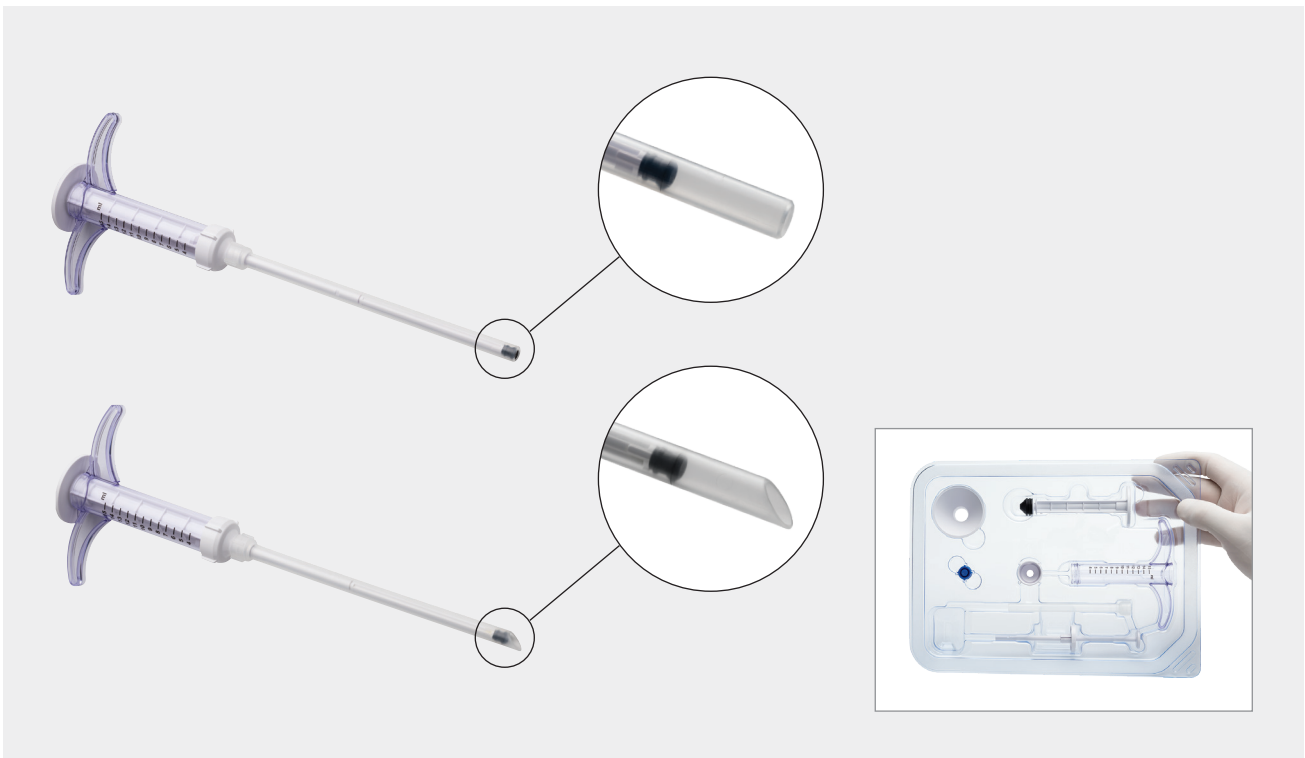
Features and Benefits

- **Effective:** Autograft bone has long been acknowledged as the gold standard graft for fusion
- **Minimally Invasive:** Small incision prevents patient discomfort and harvest site morbidity
- **Precise:** Three drill sizes allow predefined amounts of bone to be harvested
- **Consistent:** Morselizing tip on the disposable trephine allows for consistent autograft bone output



Product Description	Item Number
OsteoAuger Bone Graft Harvesting System, 6 mm	ABS-8000-06
OsteoAuger Bone Graft Harvesting System, 8 mm	ABS-8000-08
OsteoAuger Bone Graft Harvesting System, 10 mm	ABS-8000-10

BioXpress™ Graft Delivery Device



The BioXpress graft delivery device is designed for targeted delivery of hydrated allograft, autograft, or synthetic bone graft materials while maximizing material use.

Features and Benefits

- Dual plunger for loading the arthroscopic cannula with the graft and unloading into the desired location
- Targeted delivery with flat and tapered tips
- Ensures minimal material waste

Product Description	Item Number
Blunt Tip Cannula, 10 cm	ABS-10053-10
Angled Tip Cannula, 10 cm	ABS-10053-10-45
Blunt Tip Cannula, 15 cm	ABS-10053-15
Angled Tip Cannula, 15 cm	ABS-10053-15-45



GraftNet™ Autologous Tissue Collector



The suction-activated GraftNet device is designed to collect autologous bone from the surgical site and can be used for a multitude of applications, including spine, cranial, orthopedic, oral, and maxillofacial. The small, inline device allows for maximum harvesting of autologous bone chips generated using a high-speed burr and collected through a connected suction tip, such as a Frazier suction tube. This recovered autologous bone is collected in an easily accessed, sterile filtered chamber. The GraftNet autologous tissue collector makes recovering and gaining access to autologous bone chips as simple as Resect and Collect.™

- Universal adapters make for easy attachment to common suction devices
- Maximize autologous bone collection
- Quickly access recovered tissue
- Increase opportunity for arthrodesis success with maximum autograft volume

Product Description	Item Number
GraftNet Autologous Tissue Collector	ABS-1050

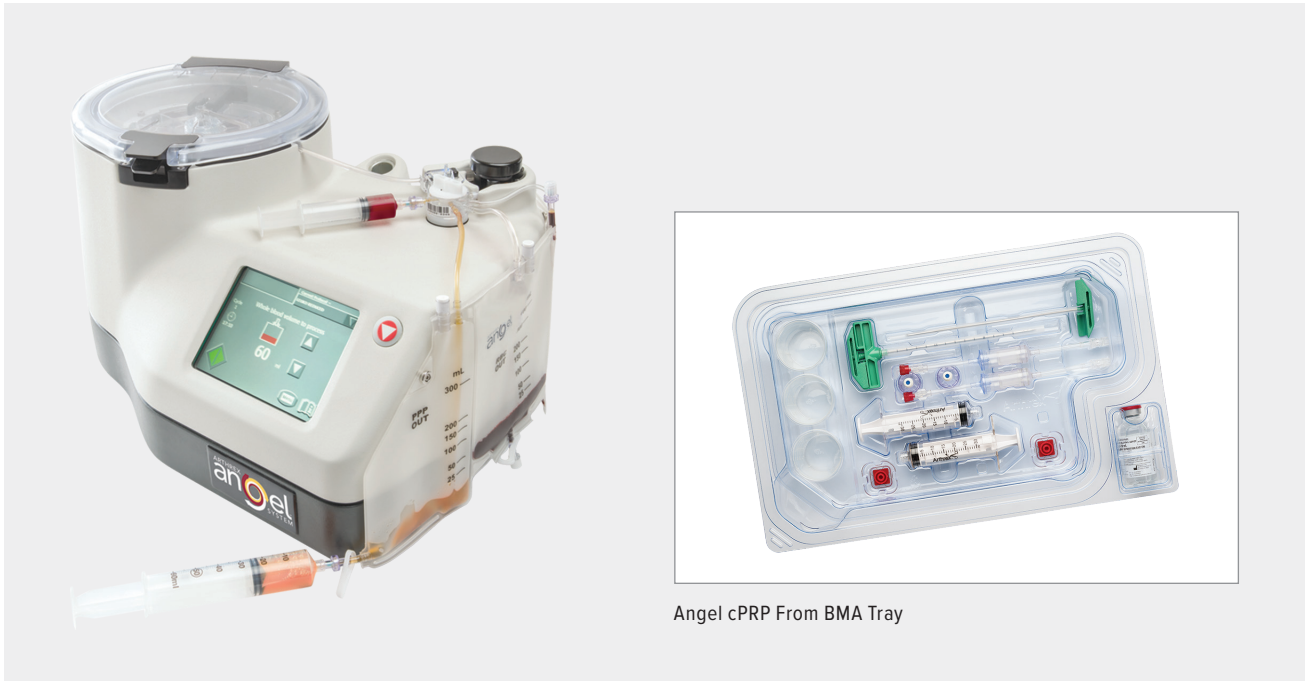


GraftNet[™]
AUTOLOGOUS TISSUE COLLECTOR



Autologous Blood Products

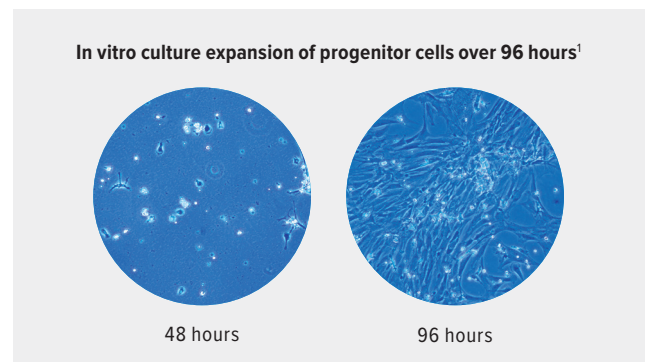
Angel® PRP and Bone Marrow Processing System.....	86
Vortex™ Needle Potential BMA Recovery Sites	88
Vortex™ Threaded Recovery Needle	89
Vortex™ Threaded Recovery Needle With Angel® cPRP System	90
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Angel cPRP From BMA Tray

Technology is what sets the Angel cPRP system apart from the competition. The Angel cPRP and bone marrow processing system uses proprietary sensor technology and one-button automation to deliver customized PRP concentrate. The Angel system is the only device that can provide PRP or cPRP from BMA with adjustable cellular levels. Bone marrow is a rich source of platelets, nucleated cells, and progenitor cells.

- Proprietary platelet sensor system
- Adjustable platelet concentrations
- Adjustable white blood cell (WBC) concentrations
- Programmable—can store up to 30 custom processing protocols
- Each processing kit can process 3 cycles of up to 180 mL on the same patient
- Flexible processing volume, 40 mL to 180 mL
- Closed system; delivers PRP, platelet-poor plasma (PPP), and red blood cells (RBCs) into separate, sterile compartments



Reference

1. Arthrex, Inc. LA1-00036-EN—B. Naples, FL; 2018.



High-specificity 3ST light sensor technology

Advantages of 3-Sensor Technology (3ST)

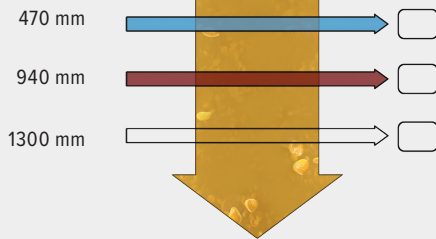
- No syringe switching
- No manual steps to prepare PRP
- Delivers PRP, PPP, and RBCs into separate, sterile compartments
- Ability to modulate platelet, leukocyte, and RBC content
- Consistent PRP output

High-specificity 3ST light sensor technology and automated valve actuation are the foundation of the Angel cPRP system. The results of these features are the production of a high yield of PRP and PPP from whole blood.

Product Description	Item Number
Angel System Centrifuge	ABS-10060
Angel System Centrifuge, refurbished	ABS-10060R
Angel Kit	ABS-10063
Angel PRP Kit	ABS-10061T
Arthrex Biologics Cart	ABS-10100

Angel® cPRP and Bone Marrow Processing System (Cont.)

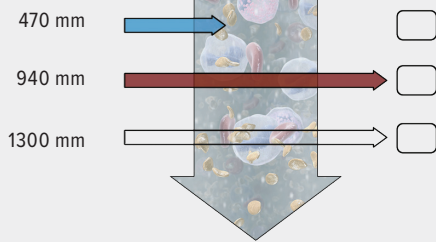
Detectors



Plasma

When plasma is present, all three light beams pass through and contact the detector. The Angel device recognizes the presence of plasma and turns the valve to collect PPP. The PPP is deposited in the PPP collection reservoir.

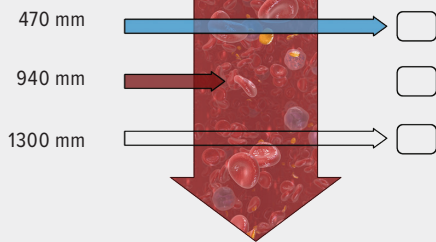
Detectors



Platelets and Nucleated Cells

When platelets and nucleated cells are present, the 470 nm wavelength of light is absorbed. The absence of the 470 nm beam on the detector alerts the Angel system to stop collecting PPP. The Angel system will then actuate the valve to collect PRP. The PRP is directed into the collection syringe on top of the unit.

Detectors



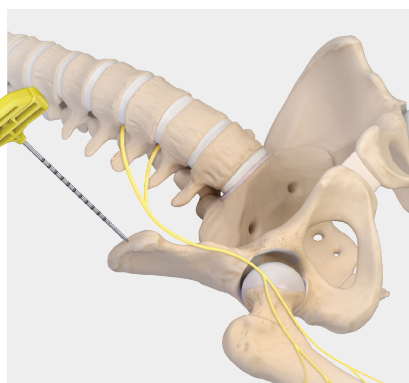
RBCs

The 940 nm wavelength is absorbed by RBCs. When the detector no longer detects the 940 nm beam, the Angel system will allow a percentage of RBCs to pass through into the PRP collection syringe. The percentage of RBCs collected in the PRP syringe is determined by the hematocrit (HCT) setting selected by the operator.

Vortex™ Needle Potential BMA Recovery Sites



Bilateral Vertebral Body Harvest Technique



Anterior Superior Iliac Spine (ASIS) Harvest Technique



Posterior Superior Iliac Spine (PSIS) Harvest Technique

Vortex™ Threaded Recovery Needle



The unique design of the Vortex threaded recovery needle for BMA recovery features a threaded tip and vent holes, allowing the user to easily and accurately reposition the tip of the needle within the bone for optimal aspiration volume.

Designed for precise depth and directional control while aspirating bone marrow, the Vortex needle allows the user to maximize the concentration of osteoprogenitor cells recovered from the patient.¹

Technical Pearls

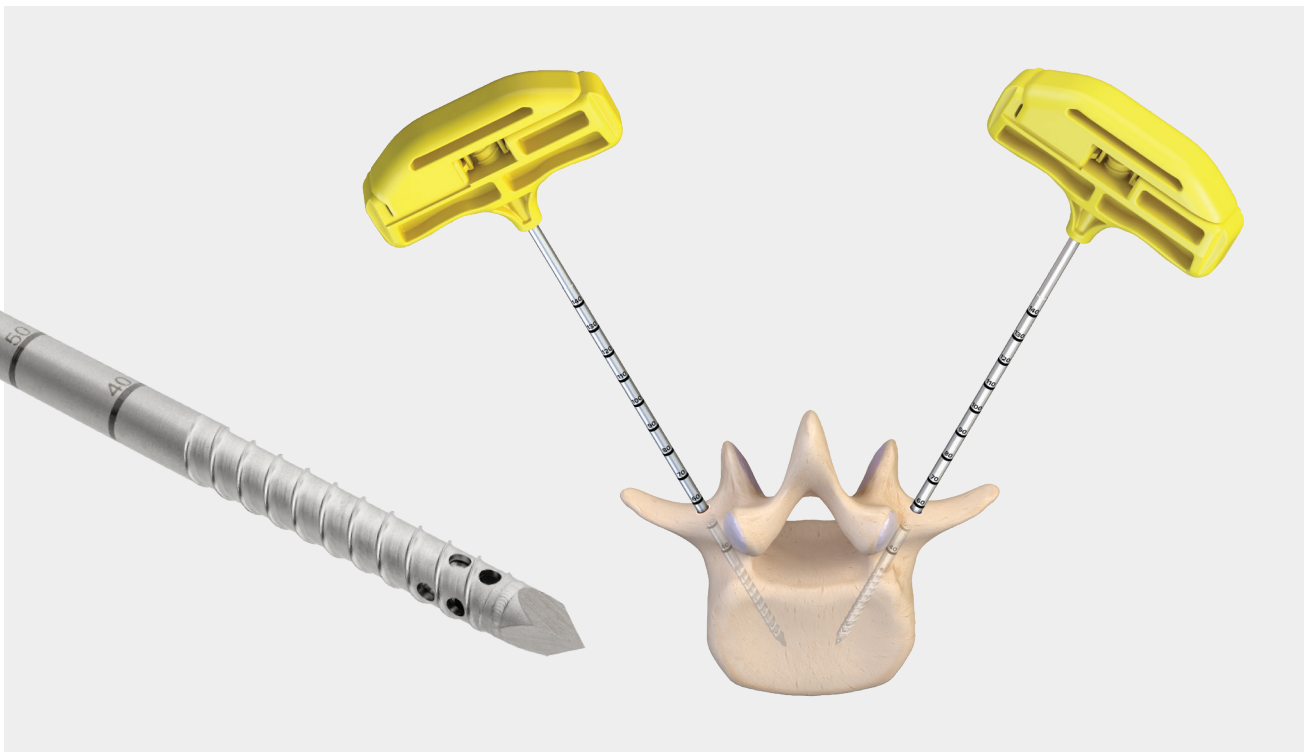
- To maximize the concentration of osteoprogenitor cells collected, it is recommended to change the depth of the needle after every aspiration of 2 cc of bone marrow. This is done by completing alternating ½ and 1½ turns of the needle.
- The use of a C-arm is recommended to assist with proper targeting

Product Description	Item Number
Vortex Threaded Recovery Needle Kit	AR-1101THK-8
Vortex Threaded Recovery Needle, 8 ga, open tip	
Prep Tray	
Syringe	
Vortex Threaded Recovery Needle Kit	AR-1101THK-13
Vortex Threaded Recovery Needle, 13 ga, open tip	
Prep Tray	
Syringe	
Vortex Needle Power Adapter	AR-1001-TH-PWR

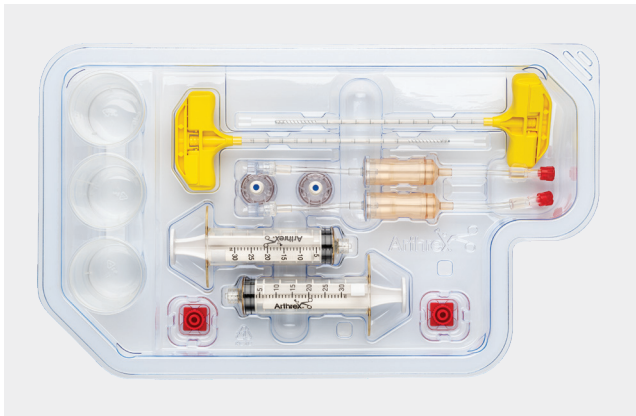
Patent pending

VORTEX
Threaded Bone Marrow Recovery Needle

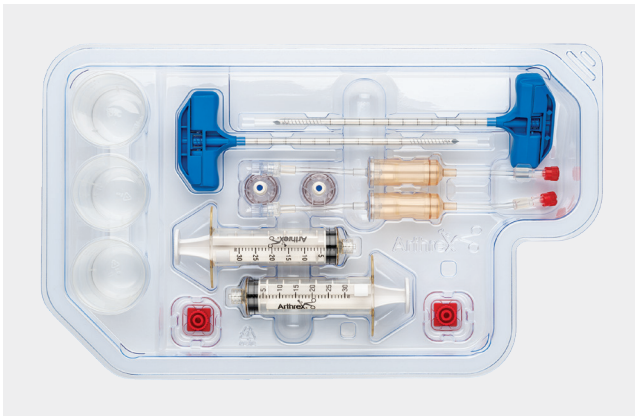
Vortex™ Threaded Recovery Needle With Angel® cPRP System



The Vortex needle can be ordered with the Angel cPRP processing kit for efficient aspiration from a wide array of orthopedic and spine applications such as a vertebral body, ASIS, or PSIS.



Aspiration Kit With Angel cPRP From BMA System, closed tip, 13 ga



Aspiration Kit With Angel cPRP System, closed tip, 8 ga

Vortex™ Threaded Recovery Needle With Angel® cPRP System (Cont.)

Product Description	Item Number
Vortex Threaded Recovery Needle	
Threaded BMA Needle, 8 ga, closed tip	AR-1101TH-8CT
Threaded BMA Needle, 8 ga, open tip	AR-1101TH-8OT
Threaded BMA Needle, 13 ga, closed tip	AR-1101TH-13CT
Threaded BMA Needle, 13 ga, open tip	AR-1101TH-13OT
Vortex Threaded Recovery Needle Kit	
Vortex Threaded Recovery Needle, 8 ga, open tip Prep Tray Syringe	AR-1101THK-8
Vortex Threaded Recovery Needle Kit	
Vortex Threaded Recovery Needle, 13 ga, open tip Prep Tray Syringe	AR-1101THK-13
Vortex Needle Power Adapter	AR-1001-TH-PWR
DrillSaw Sports 400™ Power System	
Handpiece	AR-400
Lithium-ion Battery Housing, for AR-400	AR-400UBH-1
Aseptic Transfer Kit, for AR-400	AR-400ATK-1
Battery Pack, for AR-400, nonsterile	AR-400UB
Reamer Attachment, Hudson style	AR-400RZH
Angel® System	
Angel BMA Processing Kit, 8 ga closed tip, w/o ACD-A	ABS-10062-TH8CT
Angel BMA Processing Kit, 8 ga open tip, w/o ACD-A	ABS-10062-TH8OT
Angel BMA Processing Kit, 13 ga closed tip, w/o ACD-A	ABS-10062-TH13CT
Angel BMA Processing Kit, 13 ga open tip, w/o ACD-A	ABS-10062-TH13OT
Angel BMA Processing Kit w/ Vortex Threaded Recovery Needle, 8 ga closed tip, w/ ACD-A	ABS-10062K-TH8CTA
Angel BMA Processing Kit w/ Vortex Threaded Recovery Needle, 8 ga open tip, w/ ACD-A	ABS-10062K-TH8OTA
Angel BMA Processing Kit w/ Vortex Threaded Recovery Needle, 13 ga closed tip, w/ ACD-A	ABS-10062K-TH13CTA
Angel BMA Processing Kit w/ Vortex Threaded Recovery Needle, 13 ga open tip, w/ ACD-A	ABS-10062K-TH13OTA
Angel BMA Processing Kit w/ Vortex Threaded Recovery Needle, 8 ga closed tip, w/o ACD-A	ABS-10062K-TH8CT
Angel BMA Processing Kit w/ Vortex Threaded Recovery Needle, 8 ga open tip, w/o ACD-A	ABS-10062K-TH8OT
Angel BMA Processing Kit w/ Vortex Threaded Recovery Needle, 13 ga closed tip, w/o ACD-A	ABS-10062K-TH13CT
Angel BMA Processing Kit w/ Vortex Threaded Recovery Needle, 13 ga open tip, w/o ACD-A	ABS-10062K-TH13OT
Angel System Centrifuge	ABS-10060
Angel System Centrifuge, refurbished	ABS-10060R
Arthrex Biologics Cart	ABS-10100

To order, please call Arthrex, Inc. at (800) 933-7001. Contact your local Arthrex representative for additional information.

Reference

1. McLain RF, Boehm CA, Rufo-Smith C, Muschler GF. Transpedicular aspiration of osteoprogenitor cells from the vertebral body: progenitor cell concentrations affected by serial aspiration. *Spine J.* 2009;9(12):995-100.

Arthrex ACP® Double-Syringe System



- The Arthrex ACP (autologous conditioned plasma) system allows for rapid and efficient concentration of platelets and growth factors from autologous blood for use at the treatment site
- The unique double-syringe design allows for convenient and safe handling, as the whole preparation process takes place in a closed system
- The Arthrex ACP system is affordable, easy to use, and has a quicker procedure time when compared to other PRP devices¹
- White blood cells, specifically neutrophils, are NOT concentrated within the ACP system. These cells can be detrimental to the healing process due to release of degradative proteins and reactive oxygen species.^{2,3}

Product Description	Item Number
ACP Double Syringe w/ Cap	ABS-10010S
Arthrex ACP Kit Series I	ABS-10011
Arthrex ACP Kit Series II	ABS-10012



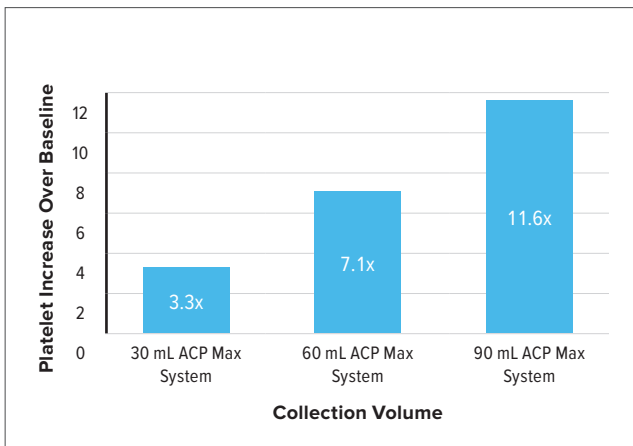
References

1. Arthrex, Inc. Data on file (APT-2470). Naples, FL; 2014.
2. Scott A, Khan KM, Roberts CR, Cook JL, Duronio V. What do we mean by the term "inflammation"? A contemporary basic science update for sports medicine. *Br J Sports Med.* 2004;38(3):372-380. doi:10.1136/bjism.2004.011312
3. Jiang N, Tan NS, Ho B, Ding JL. Respiratory protein-generated reactive oxygen species as an antimicrobial strategy. *Nat Immunol.* 2007;8(10):1114-1122. doi:10.1038/ni1501

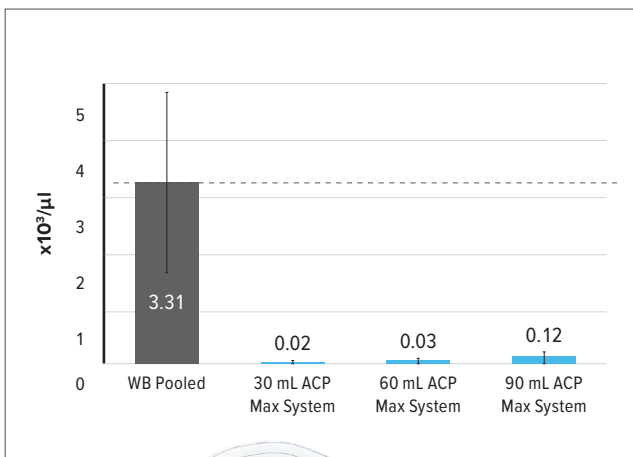
ACP Max™ PRP System

The ACP Max system allows for the efficient concentration of platelets from whole blood (WB) volumes of 30 mL, 60 mL, or 90 mL. The system's final output results in a neutrophil-poor PRP solution with up to 12x platelet concentration over baseline.¹⁻³

ACP Max Platelet Increase Over Baseline¹⁻³



Neutrophil Concentrations in PRP vs WB¹⁻³



Product Description	Item Number
ACP Max PRP System	ABS-10013
ACP Max PRP System w/ ACD-A	ABS-10015



References

1. Arthrex, Inc. Data on file (APT-5368). Naples, FL; 2021.
2. Arthrex, Inc. Data on file (APT-5535). Naples, FL; 2022.
3. Arthrex, Inc. Data on file (APT-5756). Naples, FL; 2022.



Thrombinator™ System for Use With Angel® cPRP System



The Thrombinator system is designed to produce an autologous activation serum at the point of care. The serum produced by the Thrombinator system can be used to improve the handling of bone grafts. Autologous activation serum improves handling by activating platelets to produce a gel that serves as a binding agent for bone graft material. The Thrombinator process uses the principles of the clotting cascade to produce an activation serum without the use of harsh chemical reagents such as ethanol. The Thrombinator design eliminates the need for lengthy incubation times and heating requirements. Autologous activation serum can be produced in less than 20 minutes from peripheral whole blood (WB), PPP, or PRP.

- Rapid preparation (less than 20 minutes)
- Prepare from WB, PPP, or PRP
- Produces clot in as little as 15 seconds
- Centrifugation not required

Product Description	Item Number
Thrombinator System for Use With the Angel cPRP System	ABS-10080
Angel System Centrifuge	ABS-10060
Arthrex ACP Kit Series II	ABS-10012
Accessories	
Dual Cannula, semiflexible, endoscopic, 32 cm	SA-3650
Dual Spray Tip	SA-3660
Endoscopic Applicator w/ Mixing Tip, 30 cm, 1:1 ratio	SA-3662
Blending Connector w/ Single Flexible Cannula	SA-3673
Blending Connector w/ Single Spray	SA-3674
Mixing Applicator Low Viscosity w/ Spray Tip	SA-3675
Blending Connector w/ Mixer	SA-3678



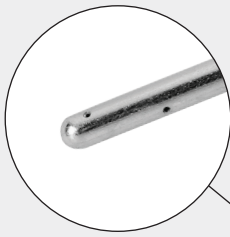
Viscous Delivery Systems



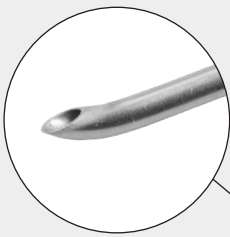
a. Viscous-Gel™ Applicator
(high viscosity)



b. Viscous-Spray™ Applicator
(low viscosity)



c. Fenestrated Delivery Needle

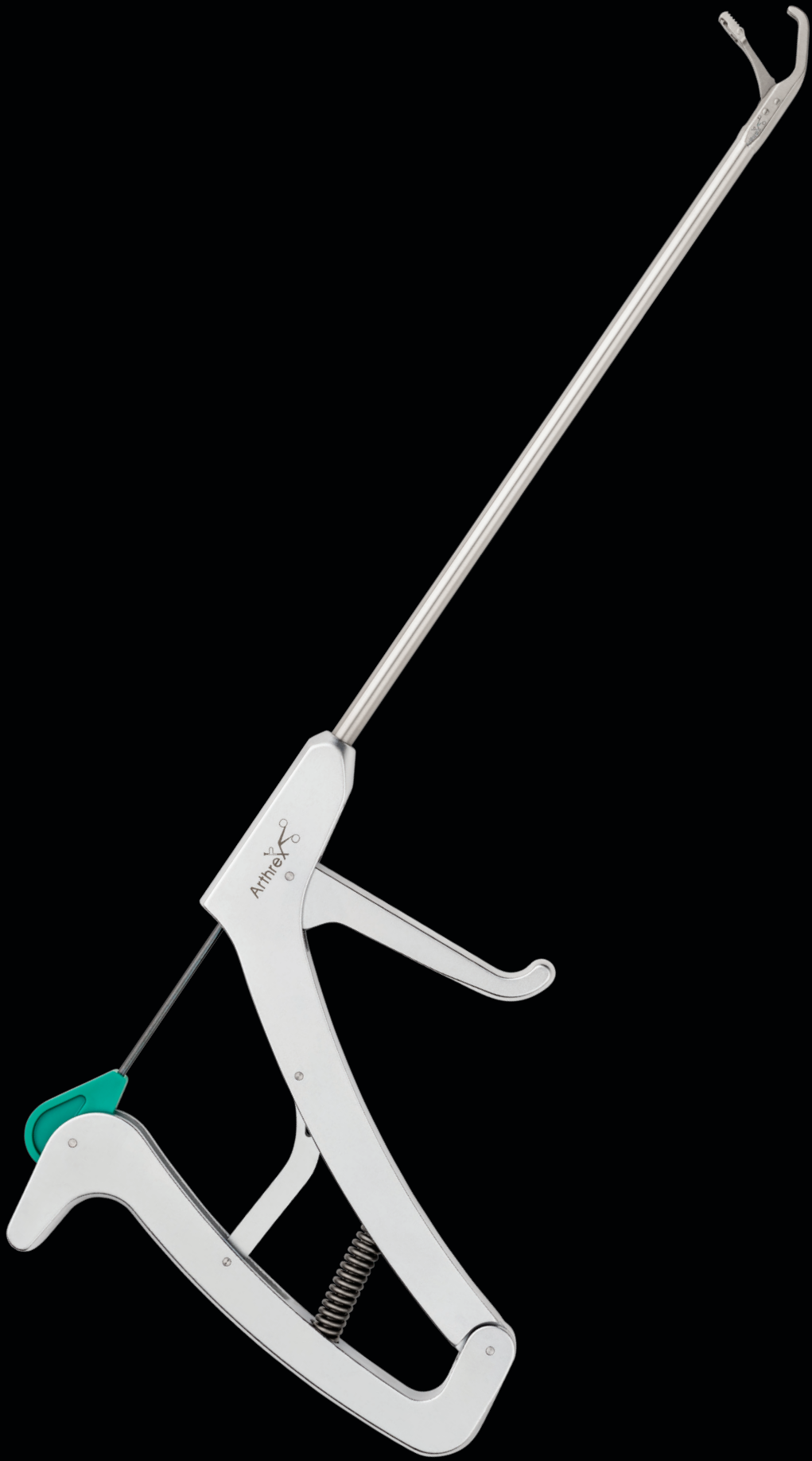


d. Tuohy Delivery Needle

- Quick and simple to attach and detach
- Easy to fill—no need to disassemble
- 11:1 ratio allows homologous mixture of two fluids
- Use to provide a low- or high-viscosity fluid
- ACP or PRP can be mixed with allograft or autograft bone prior to application to an orthopedic surgical site as a spray, gel, or clot
- Extra long, blunt, fenestrated, and beveled delivery needles

Viscous Delivery Systems (Cont.)

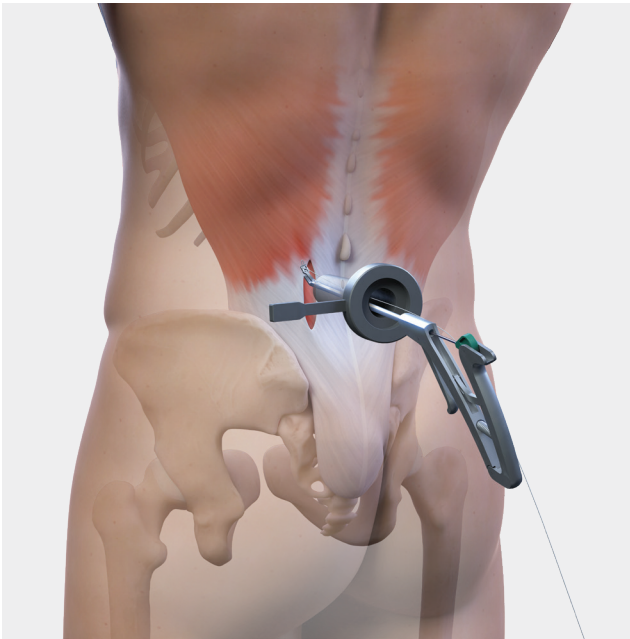
Product Description	Item Number
Viscous-Gel™ Applicator, high viscosity (a)	ABS-10050
Viscous-Spray™ Applicator, low viscosity (b)	ABS-10051
Viscous-Spray II Applicator, low viscosity	ABS-10052
Adipose Tissue Harvesting Kit	ABS-10055
Fenestrated Delivery Needle (c)	ABS-20000
Tuohy Delivery Needle (d)	ABS-21000
Cannula Bending Tool	AR-6650
Ratio Applicator Assembly, 11:1 ratio	SA-1001
Applicator w/ Dual Spray Tips, 11:1 ratio	SA-1060
Dual Cannula, 6 ga × 10 cm (4 in)	SA-3600
Dual Cannula, 20 ga × 5 cm (2 in)	SA-3615
Dual Cannula, 20 ga × 10 cm (4 in)	SA-3618
Dual Cannula, 20 ga × 18 cm (7 in)	SA-3619
Dual Cannula, 20 ga × 26 cm (10.25 in)	SA-3620
Dual cannula, semiflexible, endoscopic, 32 cm	SA-3650
Dual Spray Tip	SA-3660
Endoscopic Applicator w/ Mixing Tip, 30 cm, 1:1 ratio	SA-3662
Blending Connector w/ Single Flexible Cannula	SA-3673
Blending Connector w/ Single Spray	SA-3674
Mixing Applicator, low viscosity, w/ spray tip	SA-3675
Applicator Procedure Kit, 11:1 ratio	SA-4400
Dual Spray Procedure Kit, 11:1 ratio	SA-4460
Gas Assisted Procedure Kit, 11:1 ratio	SA-6111
Applicator Assembly, 3 cc, 1:1 ratio	SA-3303



Soft-Tissue Repair

Spine Scorpion™ Suture Passer	100
Arthrex Amnion™ Matrix	102
Biovance® Amniotic Membrane Allograft.....	103
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Interfyl® Connective Tissue Matrix.....	105

Spine Scorpion™ Suture Passer



The Spine Scorpion suture passer draws on more than 20 years of experience in the minimally invasive suture market. Designed specifically for minimally invasive spine approaches, the Spine Scorpion suture passer removes the frustration associated with closing the fascia at the end of the case.

The Spine Scorpion suture passer is ideal for closing the fascia at the end of minimally invasive spine procedures. The low-profile design allows for easy access to the fascia, at all depths, for procedures done through either a tubular or mini open approach. The Spine Scorpion suture passer automatically passes and retrieves multiple types of suture, including 0 and 2-0 sutures.

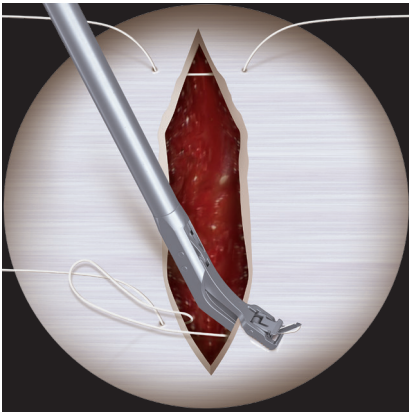
Features and Benefits

- Can close fascia up to 75% faster¹
- Efficient, consistent fascial closure at any depth
- Automatically and seamlessly passes and retrieves suture
- One-step suture loading
- Low-profile design for easy access through tubular or mini open approaches

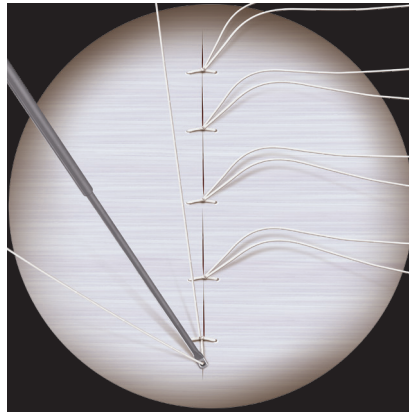


Spine
Scorpion

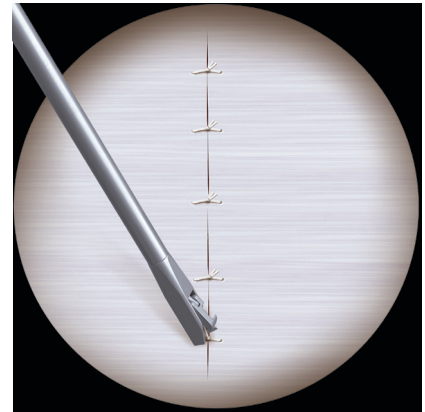
Spine Scorpion™ Suture Passer (Cont.)



Pass...



Tie...

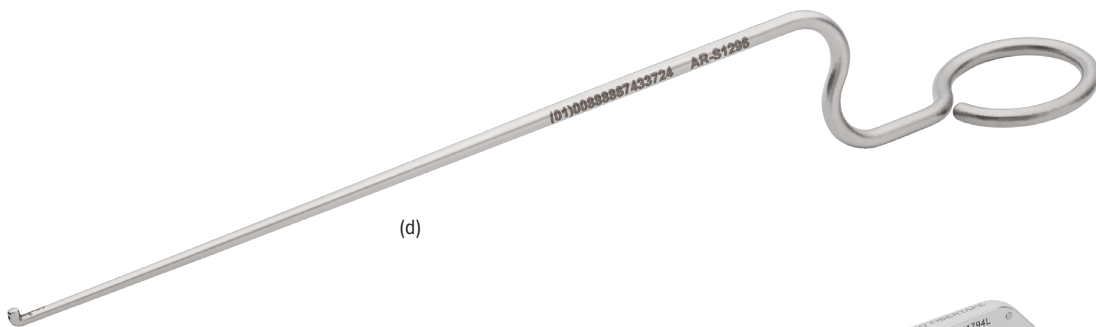


Cut.

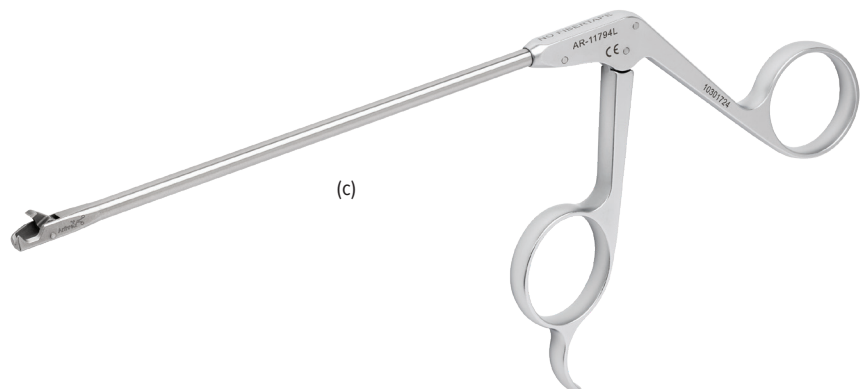


(e)

Product Description	Item Number
Spine Scorpion Suture Passer (a)	AR-13998C
SureFire® Scorpion Needle (b)	AR-13991N
Suture Cutter, 4.2 mm, open ended, left notch (c)	AR-11794L
Suture Cutter, 4.2 mm × 220 mm, open ended, left notch	AR-16794L
Small Knot Pusher	AR-1296
Single-Hole Knot Pusher	AR-1299
Knot Pusher, closed end	AR-1305
Bayonetted Knot Pusher (d)	AR-S1296
Spine Scorpion Instrument Case	AR-13998CC
Spine Scorpion Instrument Set (e)	AR-13998CS



(d)



(c)

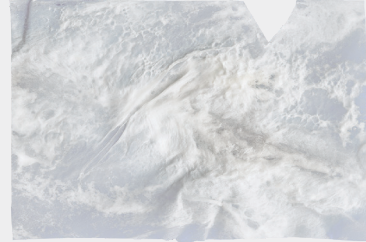
Reference

1. Arthrex, Inc. Data on file (APT-05722). Naples, FL; 2021.

Arthrex Amnion™ Matrix



Arthrex Amnion Matrix - Thin



Arthrex Amnion Matrix - Thick

Amniotic-derived tissues contain endogenous growth factors and cytokines¹⁻⁵ that maintain the natural properties of amnion. Arthrex Amnion matrix is an anatomical barrier that helps provide mechanical protection⁵ while supporting tissue with nutrient-rich growth factors.⁶⁻⁸

- Amniotic membrane is a thin, semitransparent, and resilient membrane that lines the inner lining of the placenta
- Arthrex Amnion matrix provides essential biological and mechanical protection while helping to prevent adhesion⁶
- Just as amniotic tissue protects and cushions the fetus during development, Arthrex Amnion matrix helps provide the same support to damaged tissue⁴
- Arthrex Amnion matrix harnesses growth factors essential for signaling^{4,7}



Product Description	Item Number
Arthrex Amnion Matrix-Thin	
2 cm × 2 cm	ABS-4100-022
2 cm × 3 cm	ABS-4100-023
4 cm × 4 cm	ABS-4100-044
4 cm × 6 cm	ABS-4100-046
7 cm × 7 cm	ABS-4100-077
Arthrex Amnion Matrix-Thick	
2 cm × 2 cm	ABS-4200-022
2 cm × 3 cm	ABS-4200-023
2 cm × 4 cm	ABS-4200-034
2 cm × 6 cm	ABS-4200-036
2 cm × 8 cm	ABS-4200-038
5.5 cm × 4 cm	ABS-4200-054

References

1. Jiang N, Tan NS, Ho B, Ding JL. Respiratory protein-generated reactive oxygen species as an antimicrobial strategy. *Nat Immunol.* 2007;8(10):1114-1122. doi:10.1038/ni1501
2. Coolen NA, Schouten KC, Middelkoop E, Ulrich MM. Comparison between human fetal and adult skin. *Arch Dermatol Res.* 2010;302(1):47-55. doi:10.1007/s00403-009-0989-82
3. Coolen NA, Schouten KC, Boekema BK, Middelkoop E, Ulrich MM. Wound healing in a fetal, adult, and scar tissue model: a comparative study. *Wound Repair Regen.* 2010;18(3):291-301. doi:10.1111/j.1524-475X.2010.00585.x
4. Tseng SC, Espana EM, Kawakita T, et al. How does amniotic membrane work? *Ocul Surg.* 2004;2(3):177-187. doi:10.1016/s1542-0124(12)70059-9
5. Riordan NH, George BA, Chandler TB, McKenna RW. Case report of non-healing surgical wound treated with dehydrated human amniotic membrane. *J Transl Med.* 2015;13:242. doi:10.1186/s12967-015-0608-8
6. Kim SS, Sohn SK, Lee KY, et al. Use of human amniotic membrane wrap in reducing perineural adhesions in a rabbit model of ulnar nerve neurotomy. *J Hand Surg Eur.* 2010;35(3):214-219. doi:10.1177/1753193409352410
7. Delcroix GJ, Namin S, D'Ippolito G, Temple HT, Marshall R. Preserving the natural regenerative potential of amniotic membrane. Vivex Biomedical. Miami, FL.
8. Niknejad H, Peirovi H, Jorjani M, et al. Properties of the amniotic membrane for potential use in tissue engineering. *Eur Cell Mater.* 2008;15:88-89.





Applications

- Surgical covering
- Wrap or barrier
- Prevent scar-tissue adhesion to nerves

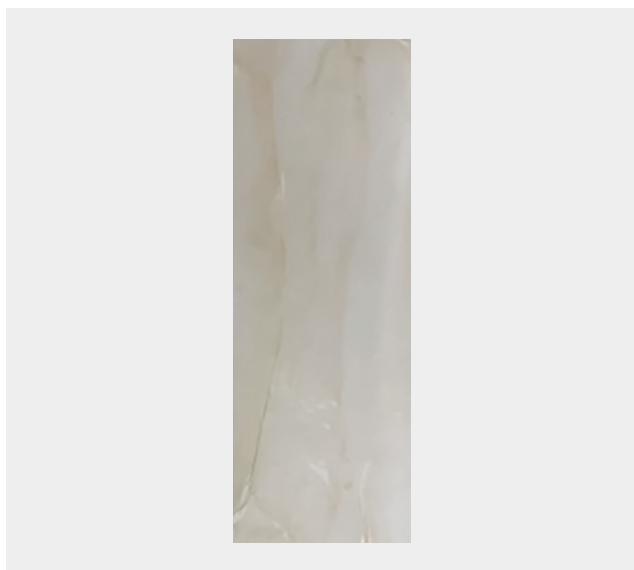
Product Description	Item Number
Biovance Amniotic Membrane, 1 cm × 2 cm	DHAM0012
Biovance Amniotic Membrane, 2 cm × 2 cm	DHAM0022
Biovance Amniotic Membrane, 2 cm × 3 cm	DHAM0023
Biovance Amniotic Membrane, 2 cm × 4 cm	DHAM0024
Biovance Amniotic Membrane, 3 cm × 3.5 cm	DHAM0035
Biovance Amniotic Membrane, 4 cm × 4 cm	DHAM0044
Biovance Amniotic Membrane, 5 cm × 5 cm	DHAM0055
Biovance Amniotic Membrane, 6 cm × 6 cm	DHAM0066

Biovance human amniotic membrane allograft is derived from the placenta of a healthy, full-term pregnancy. Unlike other placenta-derived allografts, Biovance amniotic membrane is completely decellularized, devoid of cells, hormones, growth factors, cytokines, and other substances. Biovance amniotic membrane acts as a barrier membrane during the wound regeneration process and supports tissue growth. It contains key extracellular matrix proteins that allow for the migration of host cells to permeate the graft and promote tissue repair.

Features and Benefits

- Flexible to use across a wide variety of applications
- Biologic membrane supports the body's healing process
- Room temperature storage
- Non-side-specific
- Available in multiple sizes for a variety of surgical application needs
- 10-year shelf life

CentaFlex™ Placental Matrix



Potential applications

- Surgical covering
- Wrap or barrier
- Prevent scar-tissue adhesion to nerves

Product Description	Item Number
CentaFlex Placental Matrix, 3 cm × 8 cm	HPM0038
CentaFlex Placental Matrix, 3 cm × 6 cm	HPM0036
CentaFlex Placental Matrix 3 cm × 4 cm	HPM0034
CentaFlex Placental Matrix, 2 cm × 3 cm	HPM0023
CentaFlex Placental Matrix, 3 cm × 3 cm	HPM0033
CentaFlex Placental Matrix, 2 cm × 2 cm	HPM0022
CentaFlex Placental Matrix, 0.5 cm × 4 cm	HPM0054

CentaFlex decellularized human placental matrix allograft is derived from human umbilical cord. CentaFlex placental matrix has the strength to support repair, without the trade-off of an overly thick tissue. It serves as a cell-friendly structure to allow noninflammatory cell attachment, proliferation, and growth. CentaFlex placental matrix can be quickly hydrated with a sterile fluid for maximum flexibility and easy handling. Additionally, it is terminally sterile.

Features and Benefits

- Robust and strong to hold a suture
- Available in multiple sizes for a variety of surgical application needs
- Flexible to use across a wide variety of applications
- Non—side-specific
- Room temperature storage
- 10-year shelf life



Interfyl connective tissue matrix is used to fill irregular spaces or soft-tissue deficits resulting from wounds, trauma, or surgery. Derived from the chorionic plate, Interfyl connective tissue matrix is suited for a variety of surgical applications when there is a need to replace or supplement damaged or inadequate integumental tissue. It is minimally manipulated and retains the fundamental structure and functional characteristics of connective tissue, and is available in particulate and flowable formulations.

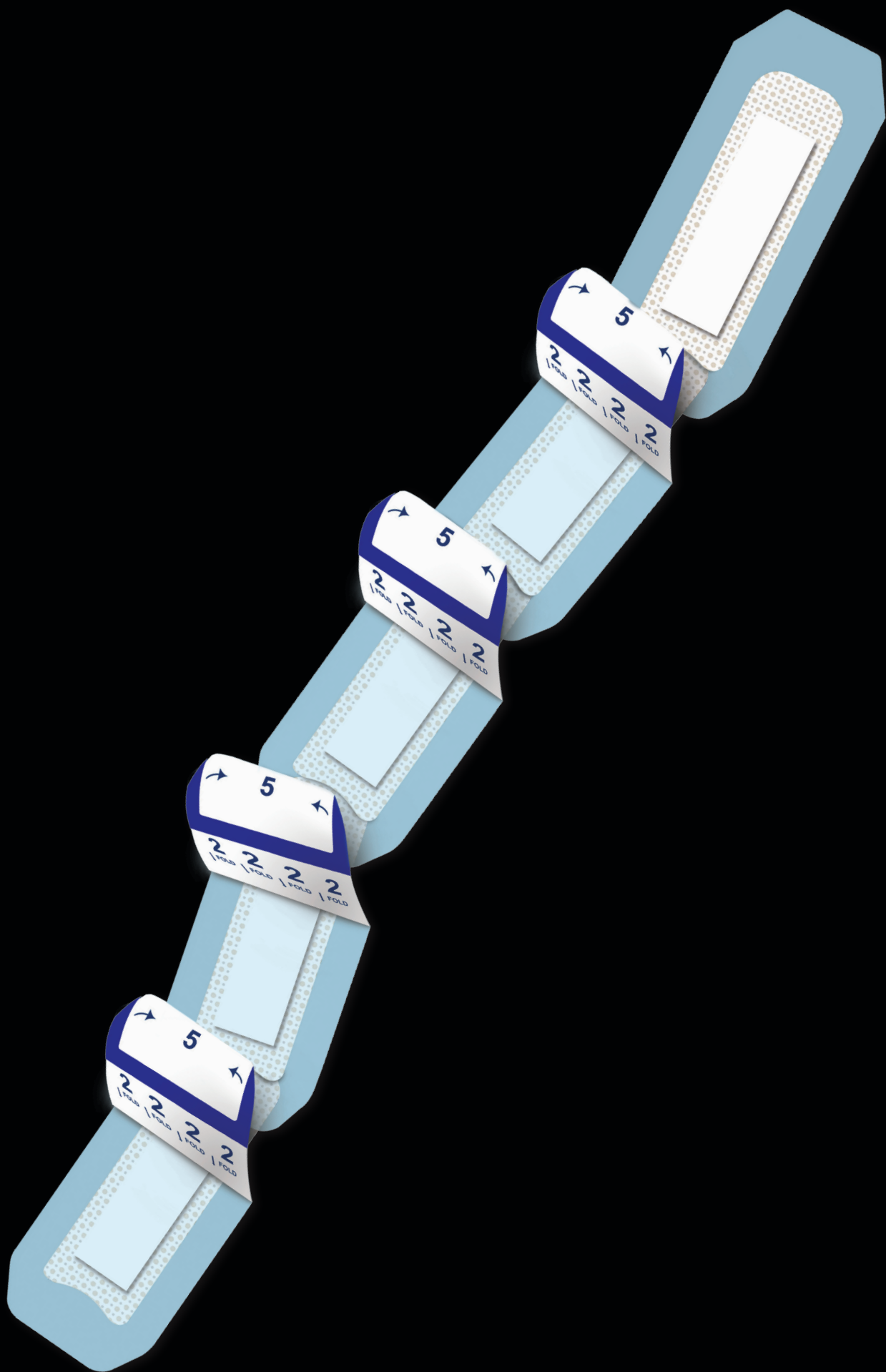
Features and Benefits

- Flowable and particulate formulations
- Conforms to irregular surfaces
- Room temperature storage
- 10-year shelf life

Potential applications

- Augmentation of deficient or inadequate soft tissue and treatment of deep dermal wounds
- Surgical wounds
- Soft-tissue voids as a result of tunneling wounds, fistula tracts, or dermal undermining, including those with exposed vital structures (bone, tendon, ligament, or nerve)

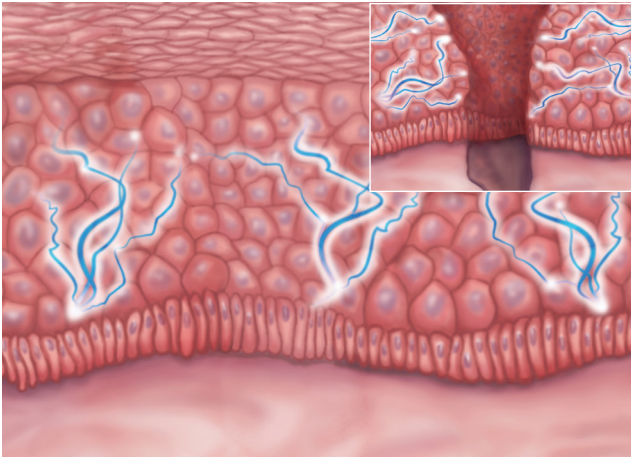
Product Description	Item Number
Interfyl Tissue Matrix, 50 mg particulate	HCTM050
Interfyl Tissue Matrix, 100 mg particulate	HCTM100
Interfyl Tissue Matrix, 0.3 mL flowable	HCTM030
Interfyl Tissue Matrix, 0.6 mL flowable	HCTM060
Interfyl Tissue Matrix, 1 mL flowable	HCTM010
Interfyl Tissue Matrix, 1.5 mL flowable	HCTM015



Wound Care

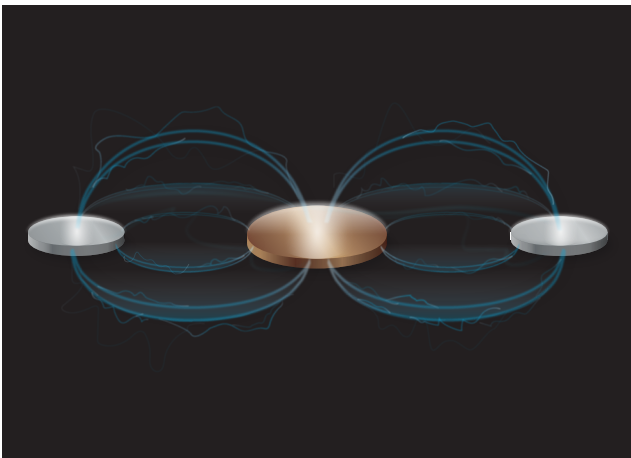
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The Science of JumpStart® Wound Dressings



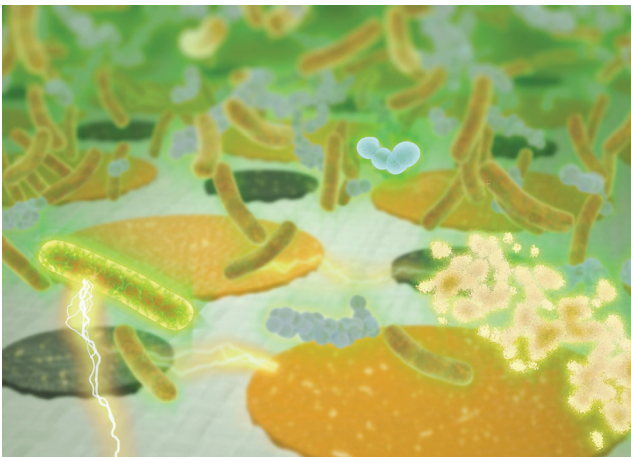
Inspired by the body

The skin naturally creates and uses electrical energy to promote healing. Electric fields in the skin create surface energy potential, known as transepithelial potential (TEP). When skin is wounded, a change in electric potential occurs, which drives the cell migration and wound healing process.



Powered by electricity

JumpStart antimicrobial wound dressings—powered by patented V.Dox™ technology—employ moisture-activated microcell batteries that wirelessly generate microcurrents designed to mimic the skin's electrical energy.



Energized by results

JumpStart dressings reduce the risk of infection by killing a broad spectrum of bacteria without antibiotics while supporting the body's natural healing process.

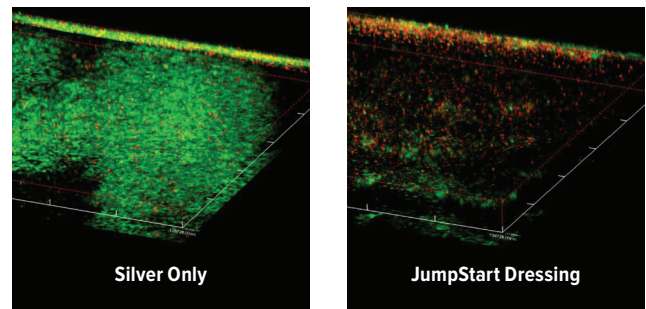
Published studies show JumpStart dressings reduce the risk of infection¹⁻⁵ and promote the healing process⁶ to optimize outcomes.



The Science of JumpStart® Wound Dressings (Cont.)

Reduce risk of infection

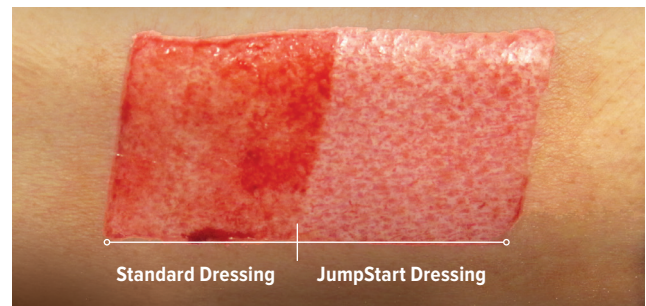
- Killed a broad spectrum of pathogens, including multidrug-resistant and biofilm-forming bacteria¹⁻³
- Disrupted existing biofilm infection and prevented biofilm from forming in preclinical studies⁴
- Prevented bacterial growth, with sustained antimicrobial impact for up to 7 days⁵
- Demonstrated electricidal antimicrobial impact versus silver dressings⁶



Live/dead fluorescence staining demonstrated bacterial killing of *P. aeruginosa* within JumpStart antimicrobial wound dressing compared to a standard silver-based dressing at 24 hours. Green = alive, red = dead.

Promote healing

Improved re-epithelialization with JumpStart dressings versus standard dressings.⁶



Prospective case series; skin graft harvest sites (N=13) demonstrated significantly greater re-epithelialization with JumpStart dressing (71.8%) vs control (46.9%) (P=.015).

Not Just a Postoperative Dressing

Bioelectric dressings have demonstrated benefits when applied preoperatively, in addition to as part of routine postoperative care.

- When applied 2 hours before the development of an acute wound, bioelectric dressing can prevent biofilm formation⁴
- JumpStart dressing has been shown to be equally as effective in preventing bacteria formation as traditional skin preparation products⁷
- When used both pre- and postoperatively, JumpStart dressing can provide enhanced antibacterial protection to wound sites

Surgical site infections (SSI) occur in
1% to 2%
of all patients worldwide undergoing inpatient surgery⁸⁻¹⁰

SSIs affect
millions
of patients each year
US: 1.5 million¹¹
Europe: 500,000⁹

SSIs increase annual treatment costs
US: +\$3.5 to \$10 billion¹²
Europe: +€1.5 to €19 billion¹³

SSIs prolong hospitalization
US: +9.7 days¹²
Europe: +6.5 days¹³

The Science of JumpStart® Wound Dressings (Cont.)

Evidence for Successful Use in Spine

- Retrospective hospital-registry study
- SSIs persist as a leading complication of spinal fusion surgery¹⁴
- The majority (57.5%) of infections studied were resistant to the prophylaxis administered during the procedure¹⁴
- There is an anatomic gradient in the microbiology of spinal fusion surgical site infection¹⁴
 - Gram-positive: cervical spine
 - Gram-negative: lumbar spine
- JumpStart dressing kills and protects against both gram-positive and -negative bacteria¹⁴



3%

estimated mortality rate with SSI¹¹

75%

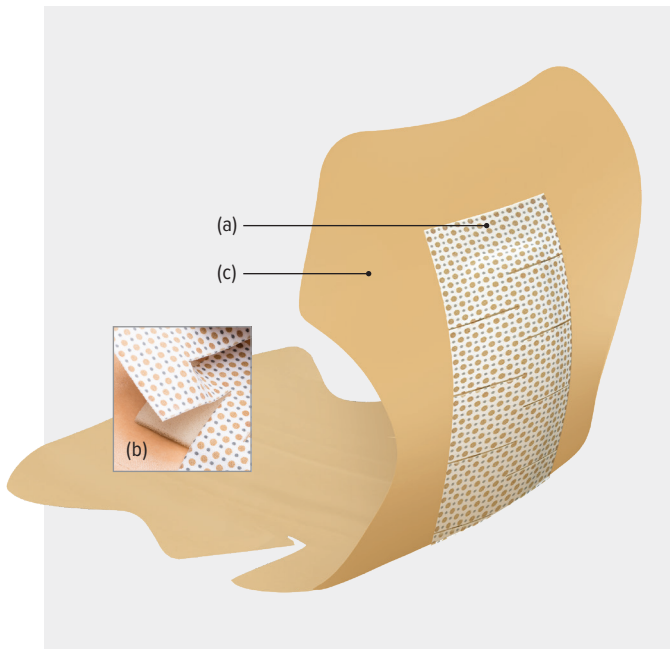
of SSI-associated deaths are directly attributable to the infection¹¹

50%

of SSIs are preventable^{8,9,15}

V·DOX
TECHNOLOGY

JumpStart
ANTIMICROBIAL WOUND DRESSING



- JumpStart dressing wound contact layer powered by V.Dox technology **(a)**
- Highly absorbent middle layer **(b)**
- Adhesive dressing **(c)**

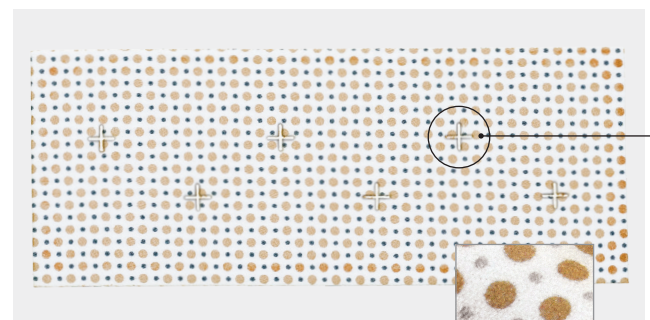
JumpStart Dressings Powered by V.Dox™ Technology

JumpStart dressings are provided on an ultra-thin, lightweight, polyester substrate and contain laser-cut fenestrations to allow easy passage of wound exudate into the absorbent layer or a secondary dressing. The flexible design easily contours to the body. JumpStart dressings may be applied directly over sutures, staples, Steri-Strip™ wound closures, and liquid skin adhesives. The dot matrix pattern of embedded microcell batteries generate microcurrents on the dressing surface in the presence of a conductive medium, such as sterile saline, water-based gel, or wound exudate.

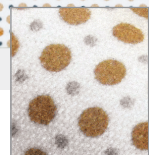
- Polyester substrate with embedded microcell batteries made of elemental silver and elemental zinc
- Fenestrations allow wound drainage to pass through dressing to absorbent layer
- Water resistant (may be left in place while showering)
- Omnidirectional stretch for enhanced mobility and comfort

JumpStart Contact Layer Dressing

- JumpStart's antimicrobial wound contact layer powered by V.Dox technology
- Polyester substrate with embedded microcell batteries made of elemental silver and elemental zinc
- Fenestrations allow wound drainage to pass through dressing to absorbent layer



Dot matrix of elemental zinc and elemental silver microcell batteries



JumpStart® Antimicrobial Wound Dressings (Cont.)

JumpStart Contact Layer Dressing

Dressing Size	Qty/Box	Item Number
1 in × 1 in, fenestrated	10	ABS-4001
1.5 in × 8 in	10	ABS-4005
1.5 in × 10 in	10	ABS-4006
2 in × 2 in	10	ABS-4002
2 in × 5 in	10	ABS-4025
3 in × 3 in	10	ABS-4003
4 in × 4 in	10	ABS-4004
8 in × 8 in	1	ABS-4008
12 in × 12 in	1	ABS-4012

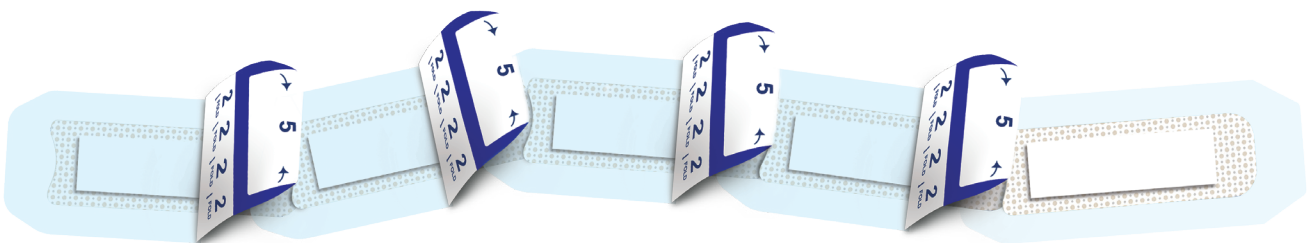
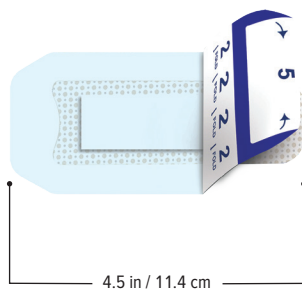
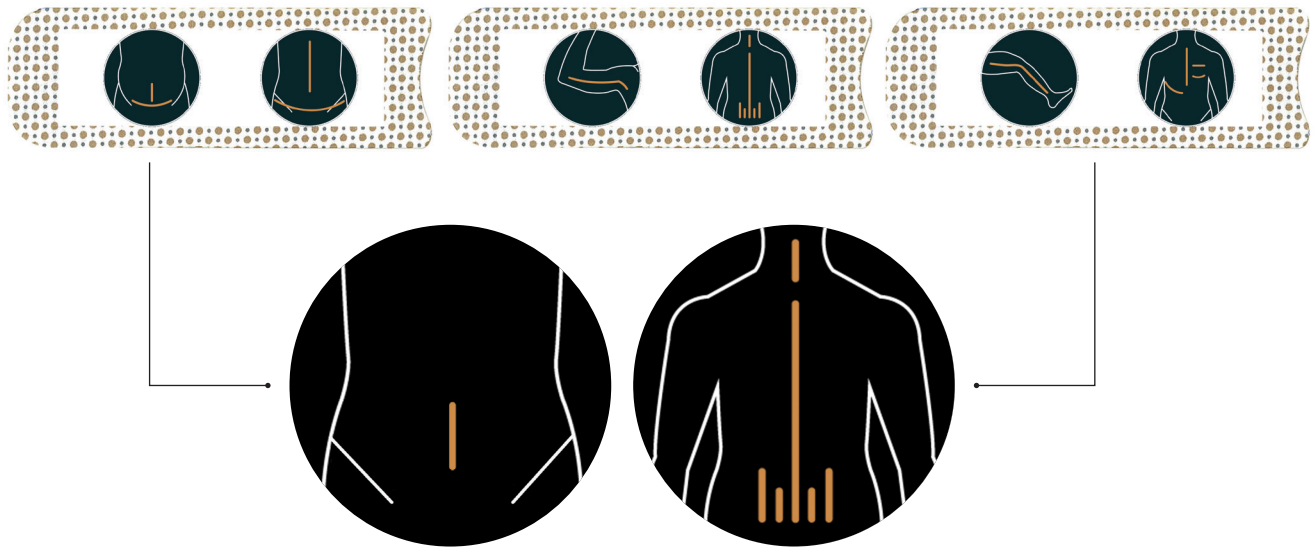
JumpStart Composite Dressing

Adhesive Size (in)	Dressing Size (in)	Qty/Box	Item Number
2.5 diameter	1 diameter	10	ABS-4054
4 diameter	1 diameter	10	ABS-4056
4 × 4	2 × 2	5	ABS-4053
5 × 6	1.5 × 5	5	ABS-4051
4.5 × 10	1.5 × 7	5	ABS-4052
6 × 11.5	2 × 9	5	ABS-4050
4.4 × 9.6	1.5 × 6.5	5	ABS-4057
4.2 × 7.5	1.4 × 4.5	5	ABS-4058

JumpStart® FlexEFit™ Antibacterial Wound Dressing

JumpStart FlexEFit Wound Dressing's Exclusive "Link and Build" Design

JumpStart FlexEFit antibacterial wound dressing employs a novel link and build design that enables it to be "built" during application to seamlessly cover incisions of virtually any length or curvature with just one product configuration.



Order a single product to meet postsurgical dressing needs.

Energel® Wound Hydrogel



Use Energel wound hydrogel to activate JumpStart® dressing's microcell batteries:

- Sterile, water-soluble gel formulated to maintain a moist wound environment and provide moisture to a dry wound
- Double-packaged sterile for use in the operating room
- Optimally sized for single use (7.5 g)
- Maintains conductivity of JumpStart dressing for up to 7 days

Product Description	Item Number
Energel Wound Hydrogel	AGL-L075-10



JumpStart FlexEFit dressing applications are not limited to the examples shown.

Description

- JumpStart FlexEFit antibacterial wound dressing is designed with the flexibility to fit virtually any incision length or curvature
- The dressing is powered by patented V.Dox™ technology, the only nonantibiotic antibacterial technology inspired by the skin’s natural electrical healing process
- Embedded microcell batteries in the dressing generate an electric field designed to mimic the skin’s physiologic electric fields, which are essential for cell migration and healing

Antibacterial Impact

- Demonstrated antibacterial impact against a broad spectrum of bacteria, including multidrug-resistant and biofilm-forming bacteria¹⁻⁴
- Designed to minimize infection risk and support the body’s natural healing process

Features and Benefits

- Water resistant (may be left in place while showering)
- One-of-a-kind antimicrobial technology
- Link-and-build design
- 7-day wear time

Pad Dimensions	Adhesive Dimensions	Qty/Box	Item Number
1.5 in × 4.5 in	2.5 in × 6.3 in	5	ABS-4060-05
3.8 cm × 11.4 cm	6.3 cm × 16 cm	10	ABS-4060-10

References

1. Kim H, Makin I, Skiba J, et al. Antibacterial efficacy testing of a bioelectric wound dressing against clinical wound pathogens. *Open Microbiol J.* 2014;8:15-21. doi:10.2174/1874285801408010015
2. Banerjee J, Ghatak P, Roy S, et al. Silver-zinc redox-coupled electroceutical wound dressing disrupts bacterial biofilm. *PLoS One.* 2015;1-15. doi:10.1371/journal.pone.0119531
3. Kim H, Izadjoo M. Antibiofilm efficacy evaluation of a bioelectric dressing in mono- and multi-species biofilms. *J Wound Care.* 2015;24 Suppl 2:S10-S14. doi:10.12968/jowc.2015.24.Sup2.S10
4. Barki K, Das A, Dixith S, et al. Electric field based dressing disrupts mixed species bacterial biofilm infection and restores functional wound healing. *Ann Surg.* 2019;269(4):756-766. doi:10.1097/SLA.0000000000002504.41
5. Vomarix Innovations, Inc. Data on file (report #SLM090512CMC01F). Tempe, AZ.
6. Blount A, Foster S, Rapp D, et al. The use of bioelectric dressings in skin graft harvest sites: a prospective case series. *J Burn Care Res.* 2012;33(3):354-357. doi:10.1097/BCR.0b013e31823356e4
7. Cooke CL, Greene RS, van Eck CF, Uquilas C, Limpisvasti O. Bioelectric silver-zinc dressing equally effective to chlorhexidine in reducing skin bacterial load in healthy volunteers. *Arthroscopy.* 2018;34(10):2886-2891. doi:10.1016/j.arthro.2018.05.046
8. Keely Boyle K, Rachala S, Nodzo SR. Centers for Disease Control and Prevention 2017 guidelines for prevention of surgical site infections: review and relevant recommendations. *Curr Rev Musculoskelet Med.* 2018;11(3):357-369. doi:10.1007/s12178-018-9498-8
9. WHO global guidelines for the prevention of surgical site infection. World Health Organization. Accessed July 10, 2023. <https://www.who.int/publications/i/item/global-guidelines-for-the-prevention-of-surgical-site-infection-2nd-ed>
10. Klevens RM, Edwards JR, Richards CL Jr, et al. Estimating health care-associated infections and deaths in U.S. hospitals, 2002. *Public Health Rep.* 2007;122(2):160-166. doi:10.1177/003335490712200205
11. Preas MA, O'Hara L, Thom K. HICPAC-CDC guideline for prevention of surgical site infection: what the infection preventionist needs to know. Association for Professionals in Infection Control and Epidemiology. Accessed July 10, 2023. https://apic.org/Resource_/TinyMceFileManager/Periodical_images/API-Q0414_L_SSI_Guidelines_Final.pdf
12. D Scott. The direct medical costs of healthcare-associated infection in U.S. hospitals and the benefits of prevention. Centers for Disease Control and Prevention. Accessed July 10, 2023. https://www.cdc.gov/hai/pdfs/hai/scott_costpaper.pdf
13. Leaper DJ, van Goor H, Reilly J, et al. Surgical site infection - a European perspective of incidence and economic burden. *Int Wound J.* 2004;1(4):247-273. doi:10.1111/j.1742-4801.2004.00067.x
14. Long DR, Bryson-Cahn C, Pergamit R, et al. 2021 Young Investigator Award winner: anatomic gradients in the microbiology of spinal fusion surgical site infection and resistance to surgical antimicrobial prophylaxis. *Spine.* 2021;46(3):143-151. doi:10.1097/BRS.0000000000003603
15. Surveillance of surgical site infections in Europe 2010-2011. European Centre for Disease Prevention and Control. Accessed July 10, 2023. <https://www.ecdc.europa.eu/sites/portal/files/media/en/publications/Publications/SSI-in-europe-2010-2011.pdf>



Service and Support

Service and Support	118
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MEMORANDUM FOR THE RECORD