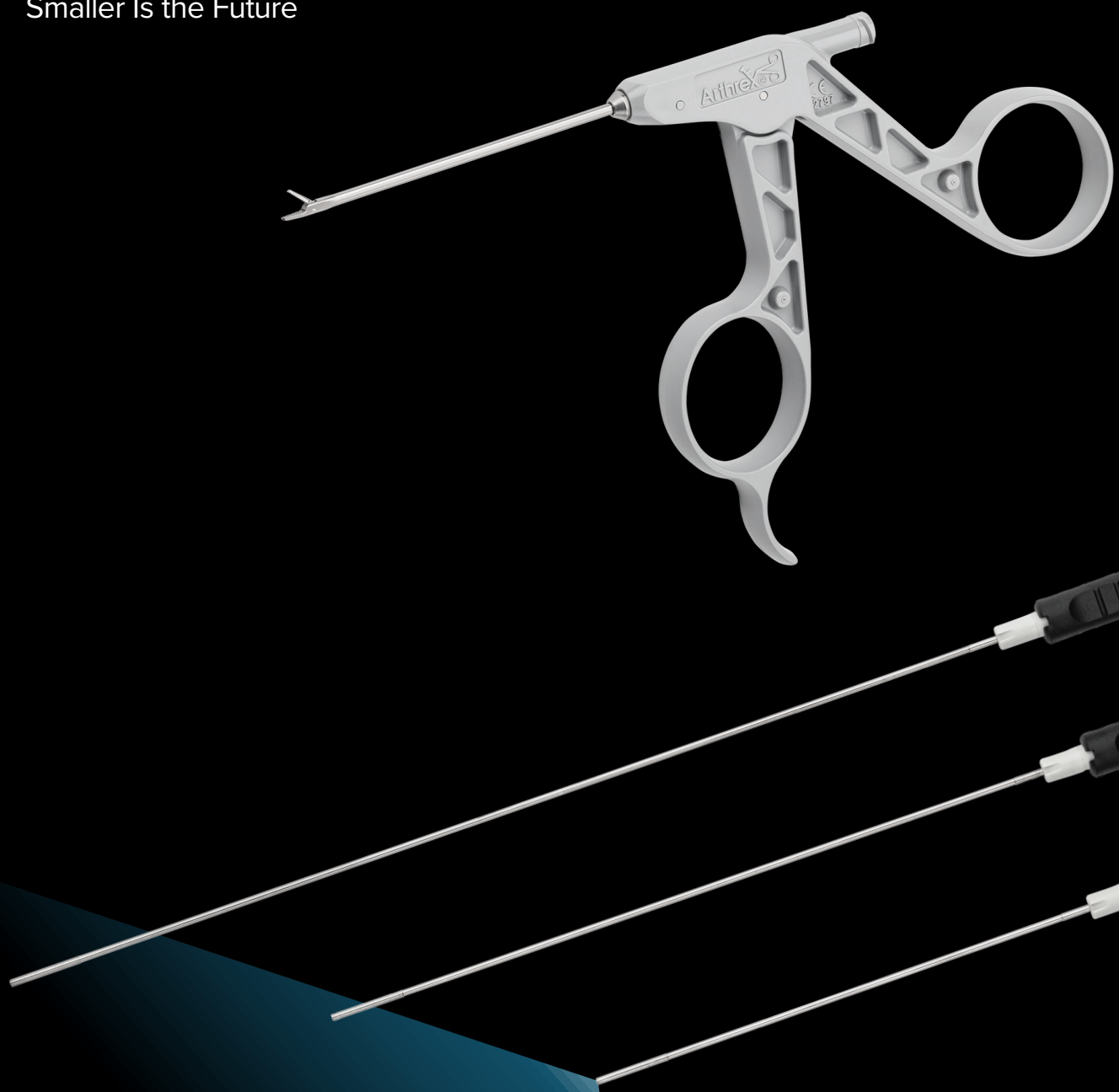
Nano Arthroscopy

Smaller Is the Future



Arthrex®
Vet Systems

The Next Generation of Nano Arthroscopy Is Here

The state-of-the-art NanoNeedle™ scope operative arthroscopy system uses high-definition, chip-on-tip, image sensor technology to provide surgeons with a needle-sized, single-use camera system. The portability of the imaging system allows the surgeon to perform minimally invasive arthroscopy in the operating room using the NanoScope™ system as the main camera or as an adjunct to a traditional camera in a treatment room.

A pioneer in Nano arthroscopy, Arthrex has designed the next generation of needle scope visualization systems. The NanoNeedle scope is a significant improvement in surgical imaging ergonomics and visualization quality.

The NanoNeedle scope provides an alternative to MRI imaging and second-look arthroscopy and offers precise, direct image-guided visualization of injections.

The NanoNeedle scope handpiece kit and system seamlessly connect with the Synergy*UHD4*™ 4K system for full OR and EMR image management integration.

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NanoNeedle™ Visualization System

The NanoNeedle visualization 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. A network-based system allows for bidirectional communication to your facility EHR, PACS, Synergy Surgeon™ app, and SurgeonVault® system.

NanoScope™ Console Specifications

- Medical-grade camera control unit and camera card edge
- 400 × 400 resolution on a 13 inch, 3-in-1 camera control unit
- Network capabilities to connect to facility's health record, PACS, and Synergy Surgeon app
- Built-in microphone for video dictation without an external microphone
- HDMI output to extend the video signal to in-room displays and integration systems
- Printing capabilities and brightness adjustment

NanoNeedle Scope 1.0

- 400 × 400 resolution with 120° field of view
- 5 mm × 50 mm depth of field
- 125 mm, 180 mm, and 250 mm lengths

NanoNeedle Scope 2.0

- 720 × 720 resolution with 120° field of view
- 5 mm × 50 mm depth of field
- 125 mm, 180 mm, and 250 mm lengths
- Compatible with Synergy Vision™ console

Consisting of the NanoScope™ console and the NanoNeedle™ scope, the Nano Arthroscopy System features the latest technologies in small imaging sensors, LED lighting, image management, and OR integration.

The NanoNeedle scope is an all-in-one, chip-on-tip camera system offering surgeons the ergonomic benefits of a pencil-style handpiece.

NanoScope Console

- Portable control unit, including documentation and data management
- 13 in touchscreen monitor
- Powered with rechargeable batteries
- Medical-grade device
- Ethernet, USB, and HDMI ports and wireless network capabilities
- DICOM
- Integrated microphone

NanoScope console	VAR-3200-0030
NanoScope console battery supply replacement	150-0012-00-A

NanoNeedle Scope

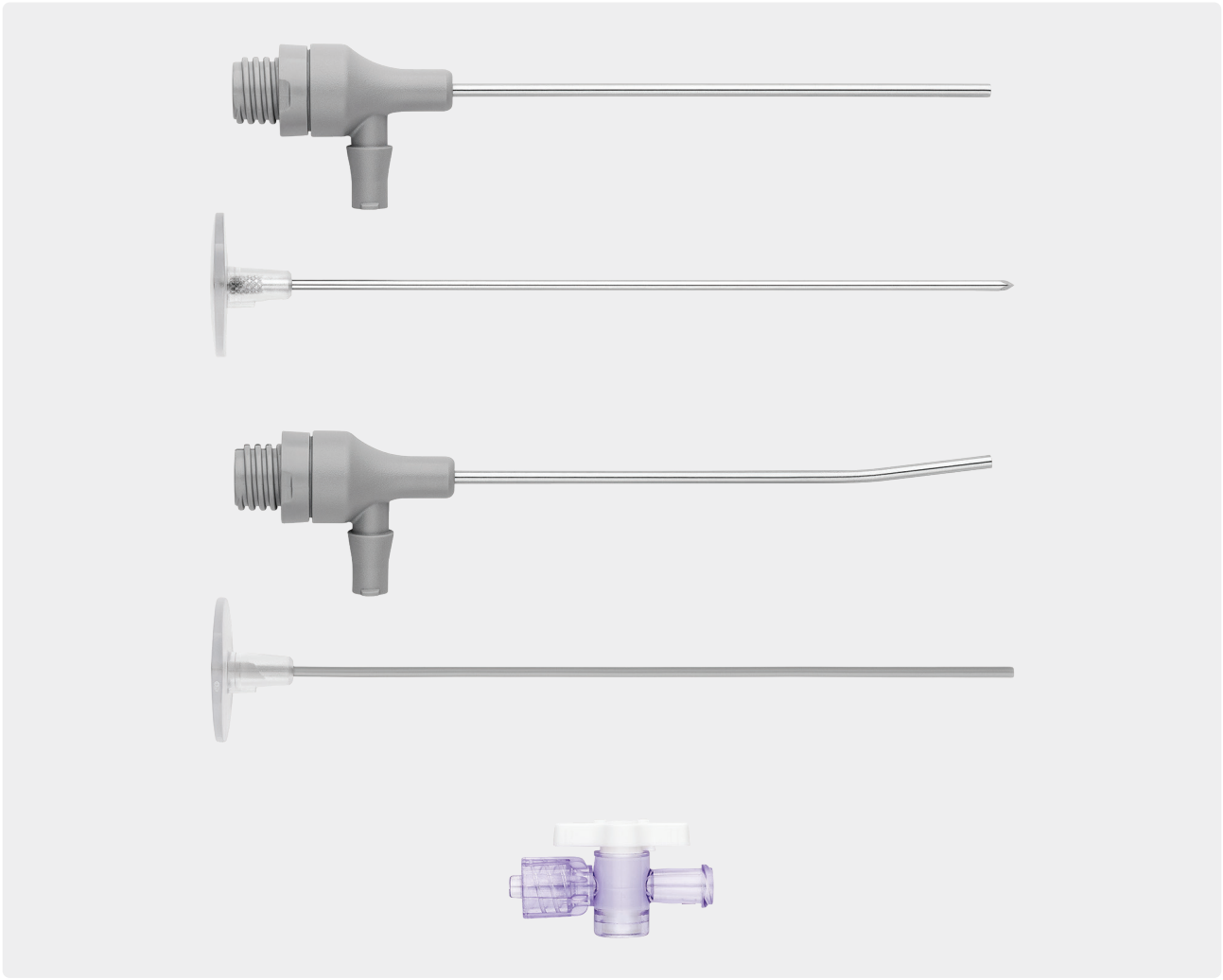
- Chip-on-tip technology
- Headless design
- 1.9 mm scope diameter
- 0° direction of view
- 120° field of view
- Integrated LED light source
- Lightweight and well balanced
- 3 different lengths: 125 mm, 180 mm, and 250 mm

NanoNeedle scope, 125 mm	AR-3210-0043
NanoNeedle scope, 180 mm	AR-3210-0044
NanoNeedle scope, 250 mm	AR-3210-0045
NanoNeedle scope 2.0, 125 mm*	AR-3210-0070
NanoNeedle scope 2.0, 180 mm*	AR-3210-0071
NanoNeedle scope 2.0, 250 mm*	AR-3210-0072

*The NanoNeedle scope 2.0 is only compatible with the Synergy Vision™ system.

NanoNeedle™ Scope

NanoNeedle Scope Sheath Kits



Surgeons can select the ideal sheath system to suit their specialty, site of care, and flow requirements independently of the NanoNeedle scope. Options include the diagnostic sheath kit with an outer diameter of 2.4 mm and high-flow operative sheaths with a larger outer diameter (3.3 mm) for higher flow rates and increased joint distension. Each system is packaged sterile and contains a straight sheath as well as a 10° angled sheath to provide a 10° viewing angle.

Components

- One straight inflow sheath with sharp obturator, single use, sterile
- One 10° angled inflow sheath with flexible blunt cannulated obturator, single use, sterile
- One stopcock, sterile

NanoNeedle scope diagnostic sheath kit, 125 mm (outer diameter 2.4 mm)	AR-3210-0050
NanoNeedle scope high-flow operative sheath kit, 125 mm (outer diameter 3.3 mm)	AR-3210-0051
NanoNeedle scope high-flow operative sheath kit, 125 mm, with crown tip and fenestration cutout (outer diameter 3.3 mm)	AR-3210-0052
NanoNeedle scope diagnostic sheath kit, 180 mm (outer diameter 2.4 mm)	AR-3210-0054
NanoNeedle scope high-flow operative sheath kit, 180 mm (outer diameter 3.3 mm)	AR-3210-0055
NanoNeedle scope high-flow operative sheath kit, 180 mm, with crown tip and fenestration cutout (outer diameter 3.3 mm)	AR-3210-0058

NanoNeedle™ Scope Access Kits

The NanoNeedle scope access kits contain both inflow sheaths and essential components for precise joint access.

Components

- One straight inflow sheath with sharp obturator, sterile
- One 10° angled inflow sheath with flexible blunt cannulated obturator, single use, sterile
- One spinal needle stylet, sterile
- One guidewire, sterile
- One stopcock, sterile

NanoNeedle scope high-flow operative sheath kit, 125 mm	AR-3210-0053
NanoNeedle scope diagnostic sheath kit, 180 mm	AR-3210-0056
NanoNeedle scope high-flow operative sheath kit, 180 mm	AR-3210-0057

NanoNeedle Scope Working Cannulas

The NanoNeedle scope working cannulas are designed to facilitate the insertion of the NanoNeedle scope, as well as Nano hand instruments and small-diameter shaver blades. They all feature a flexible plastic dam to prevent fluid loss and have a knurl pattern at the distal end to ensure the cannula stays in position during instrument removal.

Components

- One working cannula with blunt obturator, outer diameter 3.8 mm/inner diameter 3.4 mm, sterile

NanoNeedle scope working cannula, 5 cm	AR-3210-0059
NanoNeedle scope working cannula, 1.5 cm	AR-3210-0063

Nano Arthroscopy Cannulas and Insertion Kit

Outflow Cannulas

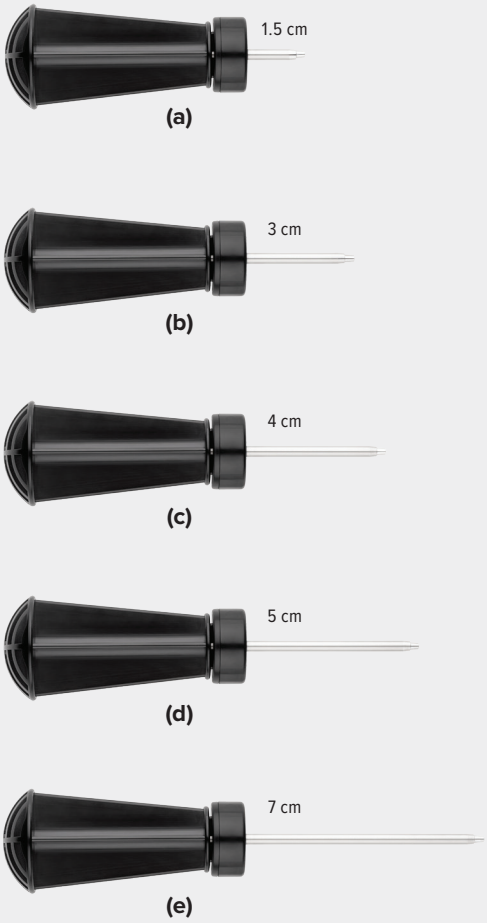
The outflow cannula can be inserted through the NanoCannula for aspiration of fluid and resected soft tissue. It connects to syringes or suction tubing.

Components

› Outflow cannula, 2.4 mm outer diameter, sterile

Outflow cannula, 7 cm **(a)**	AR-1090S-70-1
Outflow cannula, 10 cm **(b)**	AR-1090S-100-1

Nano Arthroscopy Cannulas



The Nano arthroscopy cannula features a flexible plastic dam to prevent fluid loss. The cannula is designed to facilitate the insertion of the NanoNeedle scope, as well as Nano hand instruments.

The included Tegaderm™* skin adhesive is placed over the NanoCannula to maintain cannula position during instrument removal.

Components

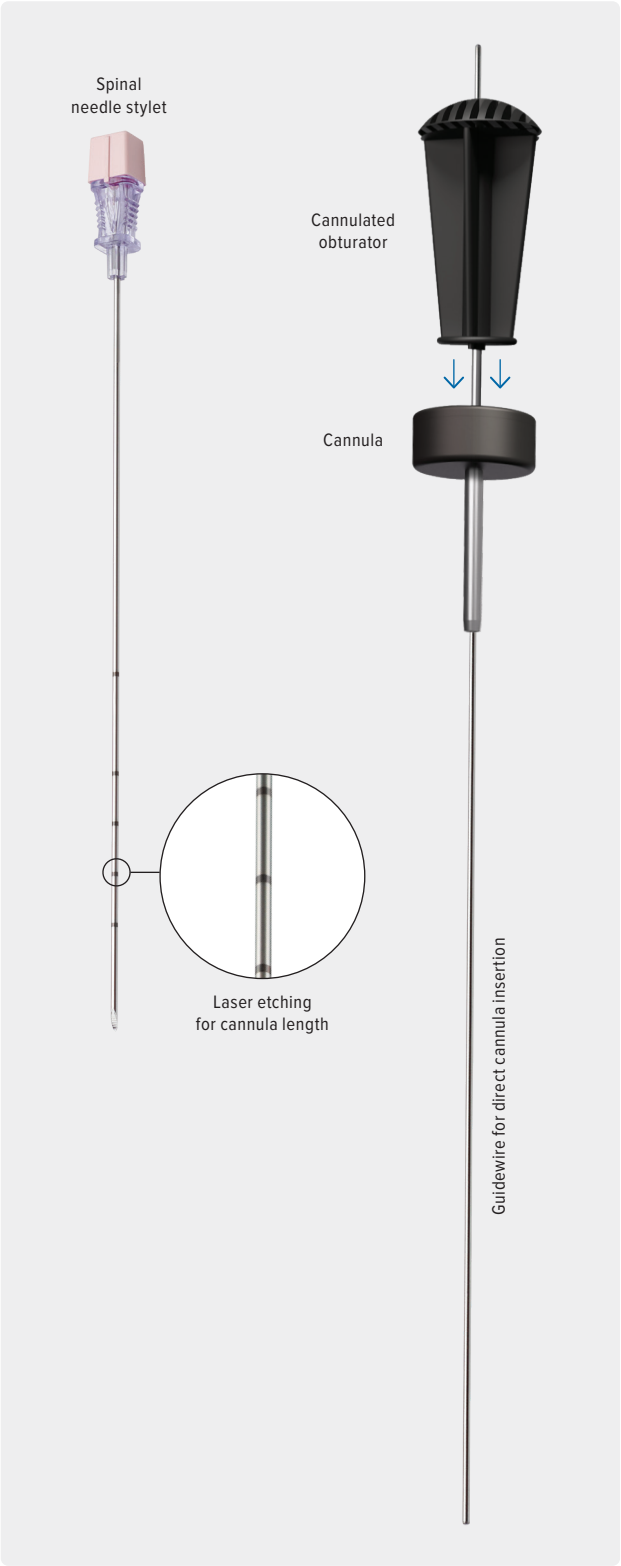
› NanoCannula and cannulated obturator, 2.7 mm inner diameter/3.4 mm outer diameter, sterile

› Tegaderm skin adhesive, sterile

NanoCannula, 1.5 cm length **(a)**	AR-1090C-15-1
NanoCannula, 3 cm length **(b)**	AR-1090C-30-1
NanoCannula, 4 cm length **(c)**	AR-1090C-40-1
NanoCannula, 5 cm length **(d)**	AR-1090C-50-1
NanoCannula, 7 cm length **(e)**	AR-1090C-70-1

*Tegaderm is a trademark of 3M Medical.

Percutaneous Insertion Kit



The Percutaneous Insertion Kit was designed for cannula insertion and measuring the appropriate cannula length.

Components

- Calibrated spinal needle stylet, sterile
- Guidewire, sterile

Percutaneous Insertion Kit	AR-1090PK-1

Nano Arthroscopy Hand Instruments

Harnessing 20 years of excellence, Arthrex has engineered the next generation of instruments for diagnostic, resection, and extraction procedures.

The NanoProbe is an articulating, retractable-hook probe used for diagnostic procedures. The NanoBiter, NanoScissor, and NanoGrasper are small arthroscopic soft-tissue resection instruments. Just 2 mm in diameter, they are designed for atraumatic insertion through tight joint spaces. These instruments are sharp and engineered to efficiently resect meniscal tissue and other soft-tissue structures.

Nano Arthroscopy Hand Instruments, 130 mm Working Length, 2 mm Diameter, Sterile	
NanoBiter, straight **(a)**	AR-10911D-1
NanoBiter, 15° up	AR-10922D-1
NanoGrasper, straight	AR-10913D-1
NanoScissor, straight	AR-10915D-1
NanoProbe, retractable **(b)**	AR-10100N

Nano Arthroscopy Hand Instruments, 70 mm Working Length, 2 mm Diameter, Sterile	
NanoBiter, straight	VAR-10901D-1
NanoBiter, 15° up	VAR-10902D-1
NanoGrasper, straight	VAR-10903D-1
NanoScissor, straight	VAR-10905D-1

NanoBiter punch

NanoBiter, 15° up

NanoGrasper

NanoScissor

Nano 2 mm Bendable Instruments

This line of instruments has been completely redesigned to meet your surgeon's needs. The customizable instruments allow surgeons to expand their minimally invasive portfolio while maintaining excellent patient outcomes. These instruments can also be reused after low-temperature sterilization with methods such as STERRAD or VHP.

Key Features

- Bendability: Instruments can be contoured for patient-specific anatomic structures using the Nano bending tool.
- Reusability: Instruments are compatible with STERRAD and VHP sterilization methods.
- Sharpness: Reusable instruments provide greater sharpness and precision.
- Size: Ergonomically designed for extremities and available in 2 lengths (70 mm and 130 mm) for expanded applications.

Nano Instrumentation, 130 mm Shaft Length, Sterile	
NanoBiter straight tip, 130 mm straight shaft, bendable, w/ FlushPort	VAR-10911F-1
NanoGrasper straight tip, 130 mm straight shaft, bendable, w/ FlushPort	VAR-10913F-1
NanoRetriever tip, 130 mm straight shaft, bendable, w/ FlushPort	VAR-10914F-1
NanoScissor tip, 130 mm straight shaft, bendable, w/ FlushPort	VAR-10915F-1
Nano BirdBeak® retriever tip, 130 mm straight shaft, bendable, w/ FlushPort	VAR-10916F-1
Nano BirdBeak grasper tip, 130 mm straight shaft, bendable, w/ FlushPort	VAR-10917F-1
Bending tool	VAR-10900

Nano Instrumentation, 70 mm Shaft Length, Sterile	
NanoBiter straight tip, 70 mm straight shaft, bendable, w/ FlushPort	VAR-10901F-1
NanoGrasper straight tip, 70 mm straight shaft, bendable, w/ FlushPort **(a)**	VAR-10903F-1
NanoRetriever tip, 70 mm straight shaft, bendable, w/ FlushPort	VAR-10904F-1
NanoScissor tip, 70 mm straight shaft, bendable, w/ FlushPort	VAR-10905F-1
Nano BirdBeak retriever tip, 70 mm straight shaft, bendable, w/ FlushPort	VAR-10906F-1
Nano BirdBeak grasper tip, 70 mm straight shaft, bendable, w/ FlushPort	VAR-10907F-1
Bending tool **(b)**	VAR-10900

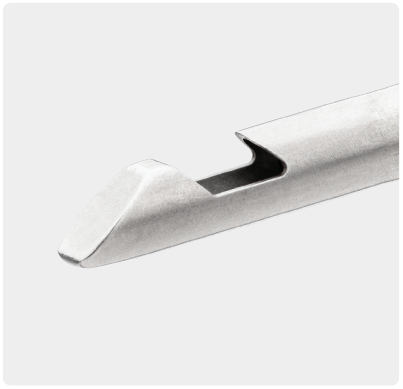
2.8 mm Nano Suction Punches

Ideal for Nano arthroscopy, the Nano suction punch allows surgeons to achieve optimal resection and aspiration. Available in 2 sizes with 3 different cutting window configurations, this device can rotate 360° for up-, side-, or down-window resection.

Reusable and autoclavable, the Nano suction punch can accommodate all joints. The Nano suction punch also integrates with the GraftNet™ device to collect aspirated tissue, making it ideal for tissue biopsies.

Nano suction punch, flat tip, 70 mm **(a)**	AR-10920F-1
Nano suction punch, scoop tip, 70 mm **(b)**	AR-10921F-1
Nano suction punch, bullet tip, 70 mm **(c)**	AR-10922F-1
Nano suction punch, flat tip, 130 mm **(d)**	AR-10930F-1
Nano suction punch, scoop tip, 130 mm **(e)**	AR-10931F-1
Nano suction punch, bullet tip, 130 mm **(f)**	AR-10932F-1

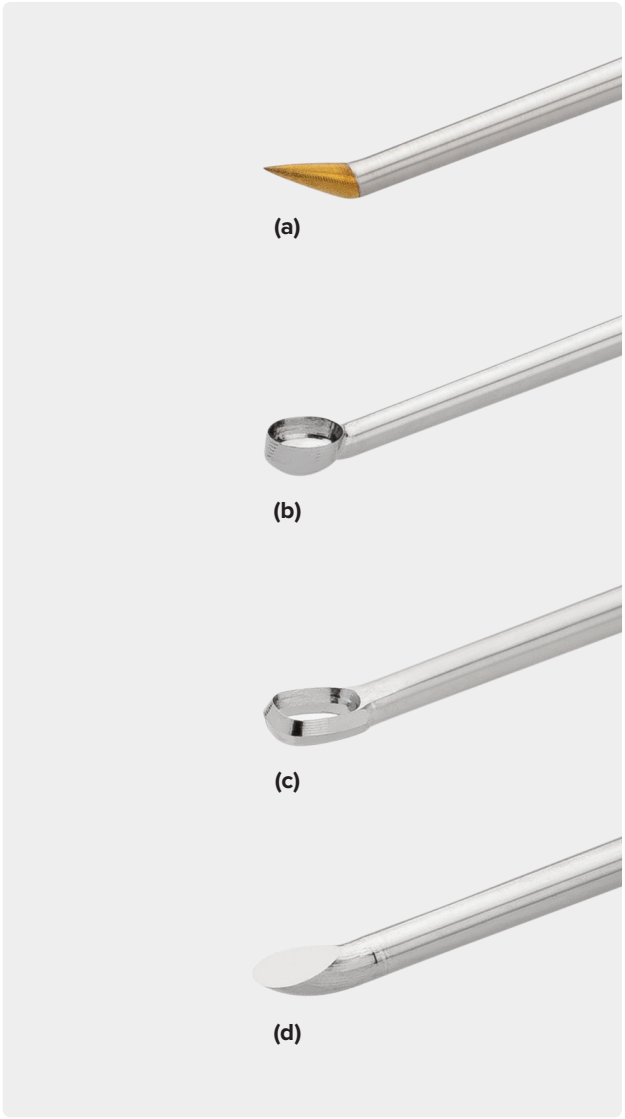
Flat tip **(a, d)**



Scoop tip **(b, e)**

Bullet tip **(c, f)**

Nano Bone Prep Instruments



- Bendability: Instruments in the Nano bone prep line can be contoured using the Nano reusable bending tool.
- Sharpness: Limited-use instruments are designed to be sharp and precise.
- Size: Ergonomically designed for extremities, instruments in this line are available in 2 lengths (7 cm and 10 cm) for expanded applications.

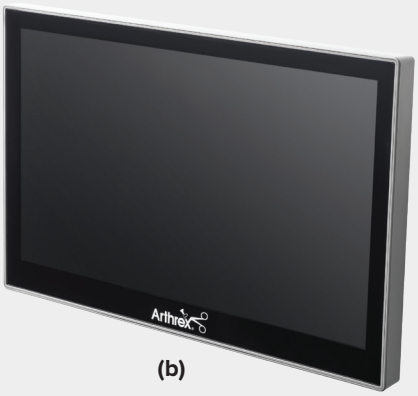
30° chondral pick, 7 cm **(a)**	AR-1091CP-70-1
30° chondral pick, 10 cm	AR-1091CP-100-1
Cup curette, 7 cm **(b)**	AR-1091CC-70-1
Cup curette, 10 cm	AR-1091CC-100-1
Ring curette, 7 cm **(c)**	AR-1091RC-70-1
Ring curette, 10 cm	AR-1091RC-100-1
Elevator, 7 cm **(d)**	AR-1091E-70-1
Elevator, 10 cm	AR-1091E-100-1

NanoScope™ Mobile Cart Options

NanoScope console mobile cart	AR-3502-CRT

Synergy Vision™ Imaging System

(a)



(b)

Experience the Synergy Vision imaging system—an all-in-one solution offering high dynamic range (HDR) 4K visualization, wide-view imaging, fluorescence capability, and seamless support for the NanoNeedle scope and video integration.

Key Features and Benefits

The Synergy Vision imaging system was designed with the latest technology to deliver optimal and revolutionary results.

- Pano™ Scope: Quickly and easily switch between traditional 30° and 70° views as well as a 45° ultrawide view at the touch of a button. The Pano scope allows surgeons to visualize more anatomy on a single screen while minimizing the need for additional portals or scopes.
- Nano Vision™ Functionality: The NanoNeedle scope integrates directly to the Synergy Vision console as either a primary or secondary view, allowing for simultaneous 4K and Nano visualization on the same screen.
- Synergy Vision Connect™ Console: Allowing for 6 inputs and 4 outputs, the Synergy Vision Connect system offers built-in OR integration capabilities for in-room switching and routing.
- HDR: The Synergy Vision imaging system offers HDR for enhanced contrast of surgical anatomy and ideal visualization.
- Fluorescence Imaging: Switch to fluorescence 4K imaging with the touch of a button. Easily toggle through different modes and colors, depending on the fluorescence application and individual surgeon preference.

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—and keep them stored in the system for future use. This streamlined process may help reduce costs, shorten OR times, and increase efficiency.

Synergy 4K Consoles	
Synergy Vison console	VAR-3200-0026
Synergy Vision Connect console **(a)**	VAR-3200-0027
Synergy Vision tablet **(b)**	VAR-3200-1016
Synergy digital documentation tablet	VAR-3200-1021
Monitor secondary stand	TP.5121.999
Monitor shelf w/ hardware	NT.4100.991
27 in LG display for secondary cart	27HQ710S

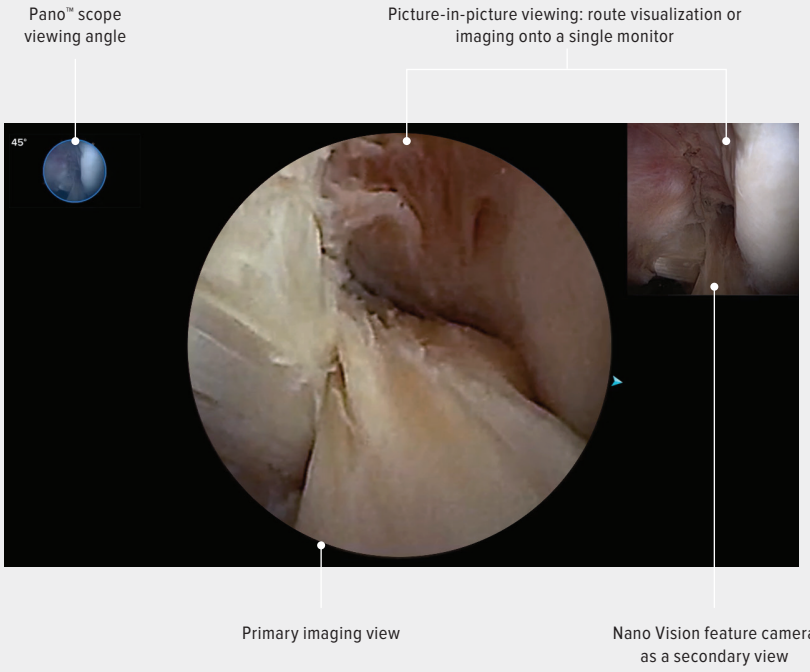
Nano Vision™ Functionality

The Synergy Vision™ imaging system supports Nano Vision functionality through a built-in port that connects to the NanoNeedle scope. This capability enables simultaneous use of 4K and Nano visualization, giving surgeons additional views and allowing them to see more of the anatomy than with a traditional single-camera setup.

Key Features and Benefits

Nano arthroscopy offers a variety of benefits, including:

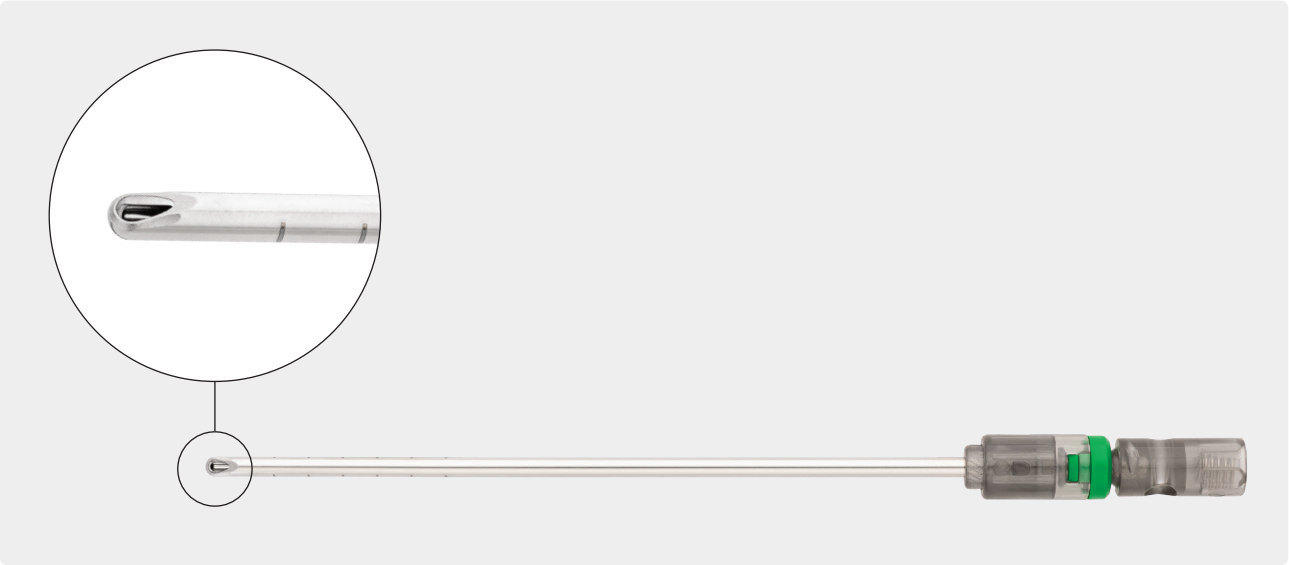
- Customized anesthetic options (eg, light sedation vs general anesthetic)
- Suitable for a variety of settings, including procedure rooms, hospitals, surgery centers, etc*
- Same-day diagnostic and surgical treatment options
- Potential to reduce facility costs
- Opportunity to redirect or increase cases in underused treatment and procedure rooms
- Ability to decrease or eliminate medical workup, monitoring, and general anesthetic complications
- Ancillary surgical views not seen with a single 4K camera



*Please refer to the Coding and Reimbursement Guide for the NanoScope™ Operative Arthroscopy System (OF1-000119) for additional information.

NanoResection™ Devices

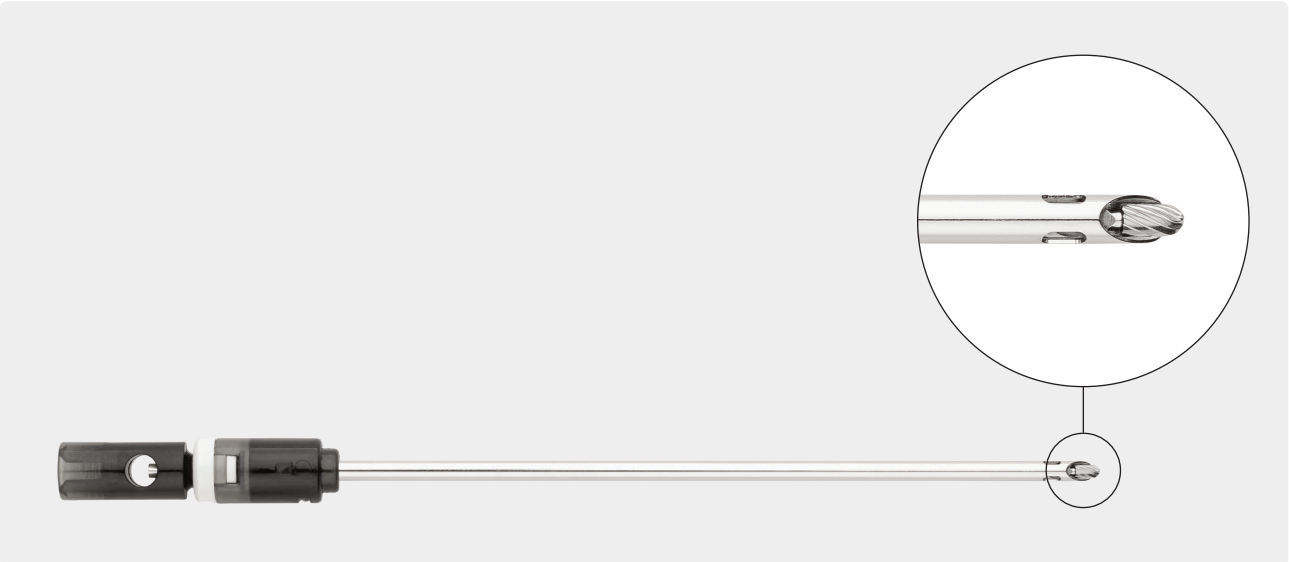
Synergy[Resection™] Console



- 2.8 mm diameter and 11 cm length
- Teardrop-shaped window to reduce clogging
- Smooth cutting windows for clean resection

Nano Sabre shaver, sterile	AR-9280NSR-1

Nano Oval Burr



- 2.8 mm diameter and 11 cm length
- Extended burr head for distal tip cutting capabilities
- 10 sharp flutes for smooth and efficient resection

Nano oval burr, sterile	AR-9280NOT-1

Nano Shaver Small-Hub Blade and Burr Options

The Nano arthroscopy small-hub shaver handpiece, blades, and burrs allow for efficient minimally invasive tissue resection and debridement. The low-profile tip design facilitates safe introduction into most tight joint spaces without the need for a limb holder.

The foot-control shaver handpiece is a high-speed, high-torque accessory. The small diameter and light weight of the handpiece and blades make the NanoScope™ operative arthroscopy system one of the most versatile resection tools available.

		1 (Ø mm)	2 (Ø mm)	3 (Ø mm)	3.5 (Ø mm)
	 **PoweRasp™ Resector, Small Hub** Ideally suited for soft-tissue, osteochondral, and osteophyte resection and bony site preparation				AR-9350PR
	 **PowerPick™ Drill, Small Hub** Excellent for microdrilling osteochondral defects (1 mm drill tip diameter; 3.5 mm shaft outer diameter with a step down to 3.25 mm)	AR-9100PP-00 (0°) AR-9100PP-45 (45°)			
	 **Torpedo™ Shaver Blade** Tapered tip and scissor-like cutting action facilitate rapid, aggressive soft-tissue resection				AR-9350TD
	 **Dissector, Small Hub** Sharp, teardrop-shaped outer window; toothed inner cutting window aggressively attacks tissue, grabbing it and drawing it into the cutting area			AR-9300DS	AR-9350DS
	 **Sabre, Small Hub** Sharp, teardrop-shaped outer window; smooth inner cutting window leaves crisp, clean edges for a more anatomic appearance following resection		AR-9200SR	AR-9300SR	AR-9350SR
8-flute	 **Oval Burr, Small Hub** Designed for rapid, aggressive bone resection in notchplasty, distal clavicle, and subacromial decompression procedures			AR-9300OBT	AR-9350OBT
10-flute	 **Round Burr, Small Hub** Ideally suited for soft-tissue, osteochondral, and osteophyte resection and bony site preparation			AR-9300RBT	AR-9350RBT

Color bars reflect family color shown on the adapter.

Synergy[Resection]™ System

Synergy[Resection] Console

- Multifunctional shaver system
- Operation of 2 handpieces simultaneously
- Automatic detection of handpiece
- Control via 1 or 2 foot pedals
- Three different oscillating modes: standard, efficient, aggressive
- Shaver: FWD/REV 8000 rpm max; OSC 3000 rpm max

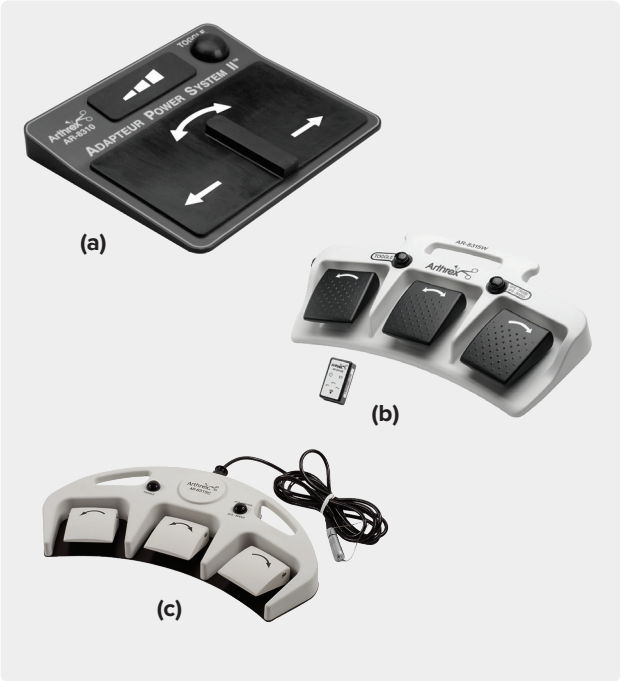
Synergy[Resection] console	VAR-8305

Shaver Handpiece

Arthrex's unique double-sealed shaver handpiece is robust and reliable with a light, ergonomic feel, and comes with or without touch-control options. With high-performance motors and the use of cutting-edge materials, Synergy[Resection] shaver handpieces are a great addition to the OR and procedure rooms.

Shaver handpiece, Nano arthroscopy	VAR-8330SJ

Footswitches



Footswitch, APS II, standard **(a)**	VAR-8310
Synergy[Resection] wireless footswitch **(b)**	AR-8315W
Footswitch, APS II, multifunction, corded **(c)**	VAR-8315C

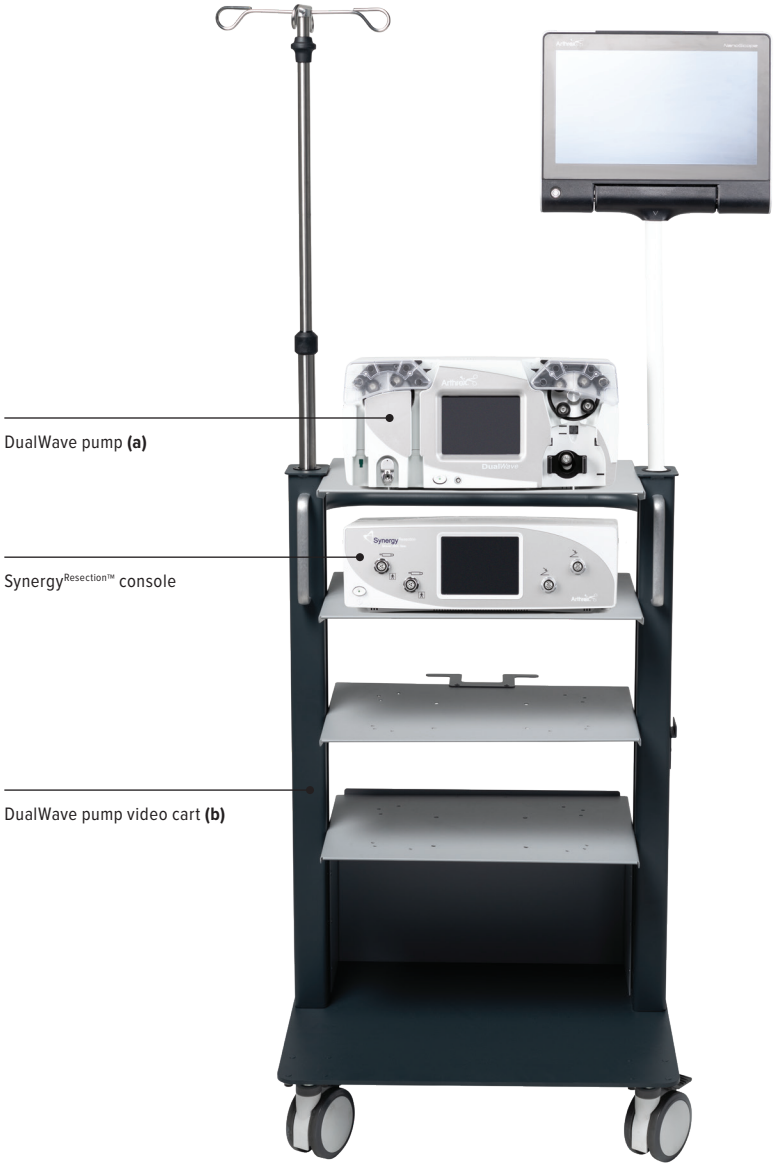
Arthroscopy Powered Resection and Fluid Management System

Arthrex's comprehensive portfolio of powered resection and fluid management products provides options for all procedure types and settings. Whether it's controlling distension during complex arthroscopic procedures or providing simple gravity flow during office procedures,

Arthrex is dedicated to offering unique solutions for safe and reliable joint distension, tissue resection, and small-profile visualization with Nano arthroscopy in the OR or treatment room.

DualWave™ arthroscopy pump **(a)**	VAR-6480
DualWave pump video cart **(b)**	AR-6481
Continuous Wave™ 4 arthroscopy pump **(c)**	VAR-6485
Continuous Wave 4 pump cart	AR-6485PC
NanoScope™ console mounting kit	5010-1500

Continuous Wave 4 pump system **(c)**
inflow-only pressure-sensing
pump system



Tubing for DualWave™ Pump

Main Pump Tubing

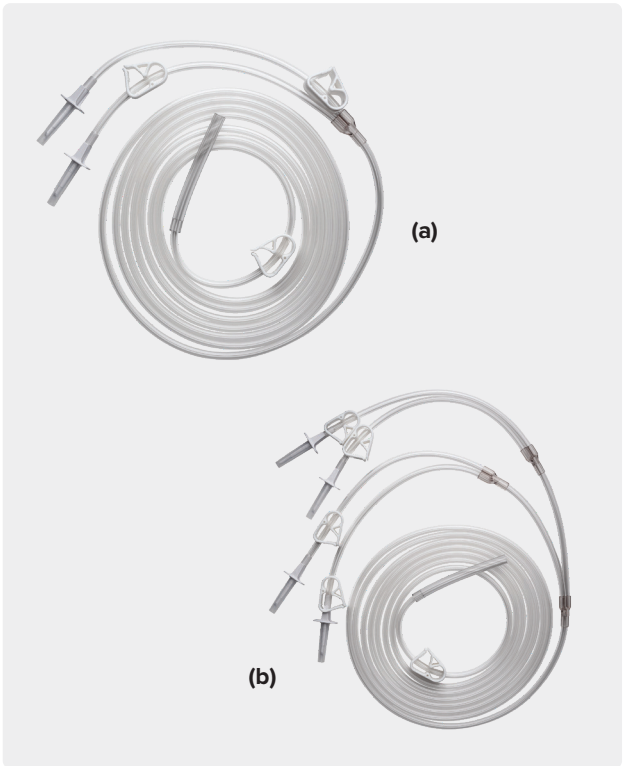
The DualWave outflow tubing allows the DualWave arthroscopy pump to regulate both inflow and outflow in the joint space. By controlling both aspects, distension is maintained at the highest level, resulting in maximum visualization.

DualWave outflow tubing for AR-6480, qty. 10	AR-6430

The combination set includes both AR-6421 and AR-6430 packaged together, simplifying preparation by reducing the number of items needed in the OR to set up the DualWave pump. With fewer tubing packages, ordering and inventory tracking are streamlined, creating a direct price reduction.

DualWave outflow tubing set with ReDeuce™ tubing system for AR-6480, qty. 10	AR-6435

Gravity Tubing



Gravity tubing is compatible with all arthroscopic sheaths and cannulas and maintains proper distension even in complex surgical cases that require high flow. It has a working length of 13 ft and a total length of 14.2 ft.

Gravity tubing, 2 spikes, 20 per box **(a)**	AR-6412
Gravity tubing, 4 spikes, 10 per box **(b)**	AR-6414

Tubing for Continuous Wave™ Pump

Main Pump Tubing

This set is for those who prefer a complete tubing set and want to replace the fluid bags after each case. Each tubing set comes with an independently packaged press-fit Luer lock to allow for tubing length adjustment if used in conjunction with the extension tubing. If used alone, the set must be discarded after each case.

Main pump tubing for VAR-6480 or VAR-6485, sterile, qty. 10	AR-6410

Extension Tubing

This unique tubing provides an economical option to reduce tubing costs by allowing the main pump tubing to remain in use for the entire surgical day. The exclusive backflow valve prevents contaminated fluid from reaching the main pump tubing. The main pump tubing and fluid bags no longer need to be discarded after each surgical case.

Extension tubing, sterile, qty. 20	AR-6220

2-Piece Pump Tubing System

The 2-piece pump tubing maintains sterility due to the design of the patient-side tubing and the touch-proof connector. Leaving the pump-side tubing in place the entire day saves on fluid because the remaining fluid does not need to be discarded after terminating each surgical case.

2-piece pump tubing with connector for AR-6480 or AR-6485, sterile, qty. 10	AR-6411

The 2-piece patient tubing set contains a backflow restrictor, saving tubing costs and setup time by requiring only patient tubing to be discarded and passed off from the sterile field after and before each case.

2-piece patient tubing, sterile, qty. 20	AR-6421

Inflow Tubing

Continuous Wave™ 4 inflow tubing	AR-6413

Accessories

The waste collection bag can be hung from the AR-6481 pump cart and can hold up to 10 liters of waste fluid. At the end of a surgical case, simply seal the bag and dispose.

Waste collection bag, qty. 10	AR-6431

This description of technique is provided as an educational tool and clinical aid to assist properly licensed medical professionals in the usage of specific Arthrex products. As part of this professional usage, the medical professional must use their professional judgment in making any final determinations in product usage and technique. In doing so, the medical professional should rely on their own training and experience and should conduct a thorough review of pertinent medical literature and the product's directions for use. Postoperative management is patient-specific and dependent on the treating professional's assessment. Individual results will vary and not all patients will experience the same postoperative activity level or outcomes.

Arthrex manufacturer, authorized representative, and importer information (Arthrex eIFUs)

US patent information

arthrexvetsystems.com