INTELI-jet®

BATTERY-POWERED TREE INJECTION

USER MANUAL

ARBORJET | Ecologel®

PARTNERS IN PLANT CARE

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INTEL-jet Overview

The INTELI-jet is a battery-powered, tree injection system that allows users to work uninterrupted all day. Patented smart injection technology with pulse modes work with the tree to enhance uptake speeds for difficult to inject trees and unfavorable environmental conditions.

Simply set the controls, and the device does the work for you, displaying injection pressure, dose count and milliliters applied on a built-in screen.

The INTELI-jet is compatible with Arborplug and plugless technologies. It can also connect directly to the FSeries® Hex PDS® manifold for large volume injections.

KEY FEATURES:

- Battery Powered
- Lightweight Carbon-Fiber Body
- Two Pulse Modes
- On-screen Dose Counter
- Set Pressure up to 200psi
- Set Dose up to 999mls
- 10 ml Glass Barrel
- Compatible with Arborplugs and Plugless Technologies
- Connects to FSeries Hex PDS Manifold for Large Volume Injections

ARBORJET® Revolutionary Plant Health Solutions

Standard Warranty & Device Registration

Our Equipment is warranted for 90 days against defects in workmanship and materials. Register your device to activate your warranty and receive a FREE Bag of Arborplugs.

To Register Your Device: Fill out the online form at arborjet.com/registerequipment
OR fill out, tear off, and mail in the registration post card included in your device packaging to receive:
• A 90-day warranty against defects in workmanship
• A free bag of Arborplugs
• Your company listed as a Service Provider on our website at arborjet.com

Warranty Process: Contact Arborjet directly for all warranty claims by emailing RMA@arborjet.com. Please do not contact your original point of purchase.

1. Locate original invoice and contact our customer service team for a Return Merchandise Authorization (RMA)
2. Once your RMA has been approved, package the item(s) appropriately, including sales receipt or invoice, write the RMA # legibly on the box, and ship to the address below:

Arborjet, Inc.
99 Blueberry Hill Rd
Woburn, MA 01801

What's Included in your INTELI-jet Kit

INTELI-jet Kit : 070-2400

- INTELI-jet Device
- INTELI-jet Power Cable
- Battery Kit (Battery, Battery Housing Connector, Battery Charger)
- Carry Bag with Shoulder Strap and Velcro Straps for Securing the Device
- 1 Liter Bottle with Supply Line
- Supply Line with Inline Check Valve
- Safety Glass
- Funnel
- 250 ml Graduated Cylinder
- 2 Viper Needles
- Allen Wrench 5/32
- Plug Setter
- Drill Bits (3/8 and 9/32)
- Clean out Tools
- 500 ml Bottle of Clean-jet
- O-Ring Replacement Kit

Unboxing the INTELI-jet: Initial Assembly Steps

When receiving and unboxing your INTELI-jet, please review all components to check for damage or missing parts. If parts are damaged or missing, please contact your distributor, Arborjet Regional Technical Manager or Arborjet Office for support.

Follow the steps below to assemble and begin using your INTELI-jet:

1. Check the battery charge status
2. Connect the battery to the battery housing connector
3. Connect the male power cable to the battery housing connector
    a) Thread the male power cable all the way to secure in place and prevent power interruptions
4. Connect the other end of the male power cable to the INTELI-jet device.
    a) Thread the male power cable all the way to secure in place and prevent power interruptions
5. Connect the .25” tubing to the Medicament Bottle or Cap Assembly
6. Connect the other end of the tubing connected to the bottle to the Inline Check Valve on the supply line attached to INTELI-jet device.

1.

2.

3.

4.

5.

6.

Before Your First Application...

Arborjet strongly recommends testing your equipment with water or CLEAN-jet™ before attempting to inject any of our approved formulations.

If the box your kit came packaged in does not have security tape, or appears to have been opened or tampered with, do not use the equipment, and contact your Arborjet Distributor for replacement instructions.

Our Quality Control procedures include calibrating the Cylinder and using a checklist to perform an audit of contents for every kit that ships out of our facility. The checklist is initialed by the assembler and supervisor and included with your completed kit for your reference.

We understand that no measure of Quality Control can mitigate every potential issue that might arise during assembly and shipment, so a final “dry” run with water or CLEAN-jet™ will confirm fittings are sealed and eliminates the potential of losing valuable product if a leak or failure is detected.

- Arborjet Production Team

Needle Selection: Viper and Stinger Compatibility

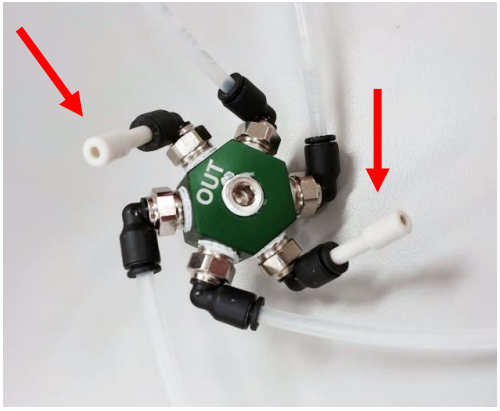
The INTELI-jet can utilize either VIPER or STINGER needles.

VIPER	STINGER
Volume Injection Pressure Enhanced Reservoir • Inject via Arborplug® • Fast uptake • No leakage • Faster wound closure • Can be used on Conifers • Suitable for infection-prone trees	Stick -> Inject -> Remove • Inject without Arborplug • Faster set up • Simple injection process • Best for ring porous trees • Can be used by non-arborists
	

Large Volume or Large Tree Injections

The INTELI-jet can utilize our FSeries® HEX PDS® for large volume or large tree injections.

If you don't own an FSeries, you can purchase an FSeries Expansion Kit (070-0077), which includes one HEX PDS manifold with 6 valve assemblies and 6 VIPER Needles.



Step 1: Determine how many injection sites are needed. You may connect up to 4 HEX PDS manifolds together for a total of 24 lines.

Step 2: Depending on the DBH of the tree, you may not need all lines of tubing coming from the Hex PDS. Insert plugs into elbow fittings if not needed.

Step 3: Connect ¼" tubing to the INTELI-jet ¼" push to connect (PTC) fitting on the Outbound line of the INTELI-jet with ¼" PTC "IN" fitting on the HEX PDS.

Step 4: To connect multiple HEX PDS Manifolds, remove ¼" (National Pipe Thread) NPT plug from the "OUT" side of the first HEX PDS. Connect HEX PDS Manifolds with 4-foot ¼" tubing from the "OUT" side of the first HEX PDS to the "IN" fitting on the next one.

How to Operate the System

Step 1: Determine the Appropriate Device Set-up for Your Injection. Based on the tree type, size, product and volume attach either the Viper or Stinger needle or HEX PDS to the outbound ¼" PTC fitting on the top of the device. Needles may be attached directly to the device or use a lead line extension.

Step 2: Connect the Battery. Attach the battery to the Battery Housing Connector. Plug one end of the INTELI-jet Power Cable into the port on the Battery Housing Connector and the other end into the port on the lower left side of the device.

Step 3: Attach the Supply Line. Fill medicament (1 liter) bottle with product or screw the Cap Assembly onto the product bottle. Attached one end of ¼" supply line to the ¼" PTC valve on the Cap Assembly and the other end to the Inline Check Valve on the supply line attached to the INTELI-jet device.

Step 4: Turn on the Device. Press the green ON/OFF button once to power on the device; power light turns on, display shows "INTELI-jet by Arborjet"; then indicates "Prime Mode".

Step 5: Prime the Device. To prime (or fill the system prior to injection), first ensure the system is not under pressure by removing needles from the tree and opening needle valves (if applicable). If the device is not already in "Prime Mode", press Mode button until "Prime Mode" is displayed on the LCD screen. Press Dose/Prime button – the piston will move forward and back indefinitely. Wait for product to move through the lines and fill the chamber. Once system is full press the red Stop/Retract button to stop piston. Press Stop/Retract button again to retract piston to start position. ***IMPORTANT: The device must be primed under zero pressure. Attempting to prime under pressure may result in failure to properly prime the device / lines.***

How to Operate the System (Continued)

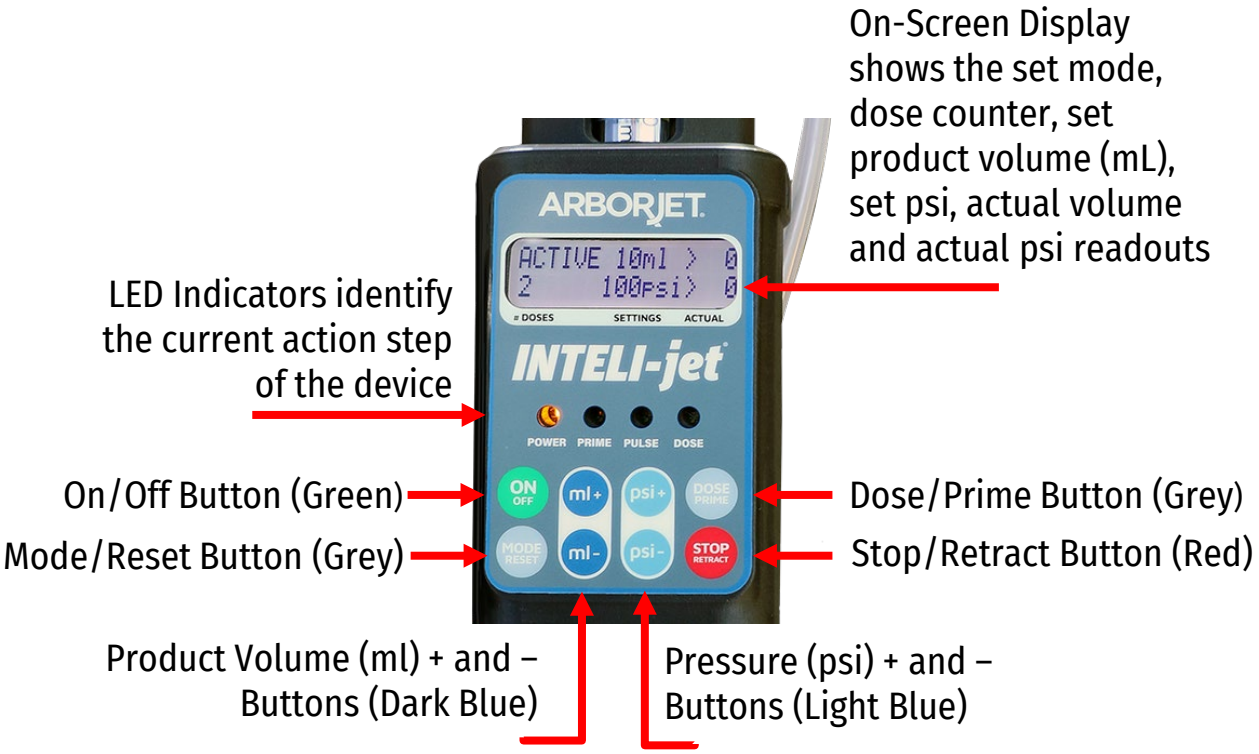
Step 6: Prepare Injection Sites. Drill injection holes at desired diameter and depth, Set Arborplug into tree at desired spacing and depth or leave plugless.

Step 7: Set the Mode, Dose Volume and Pressure. Once system is primed, press Mode button to cycle through and select desired mode (Fixed Mode, Active Mode, or Smart Mode – see pages 12 and 13 for mode and setting descriptions). Set Dose Volume using ml+ button to increase the desired volume per dose or ml- to reduce the desired volume level. Set Pressure using the psi+ button to increase the desired maximum pressure or psi- to decrease pressure level.

NOTE: Once dose volume and pressure are set, they cannot be adjusted in the middle of the injection cycle. If they have been set incorrectly and need to be adjusted for the current injection, press Stop/Retract button once to stop the injection. Make note of the volume injected, adjust the settings as necessary (taking into account the volume of product already injected) and restart the injection process by pressing the Dose / Prime button.

Step 8: Inject. Insert Viper/Stinger needle into injection site. Press Dose button to initiate injection event. The piston will move forward and back depending on set dose volume. Wait until the piston stops moving (when full desired volume has been injected). Move the needle to the next injection site and press the dose button again. Repeat as needed. Upon finishing the injection of a tree, press the retract button to move the piston back to the start position.

INTELI-jet Modes and Settings



Modes:

1) **Prime Mode:** to prime the system with product
2) **Fixed Injection Mode:** to inject at fixed (set) maximum pressure
3) **Active (Pulse) Injection Mode:** to create an active pulse. Injects product to achieve set maximum pressure; retracts slightly to reduce pressure by 10%; repeats continuously until desired volume is achieved.
4) **Smart (Pulse) Injection Mode:** to respond to the tree's internal pressure by injecting product to achieve set maximum pressure; pauses and waits for the tree's backpressure to drop by 10%; repeats continuously until desired volume is achieved.

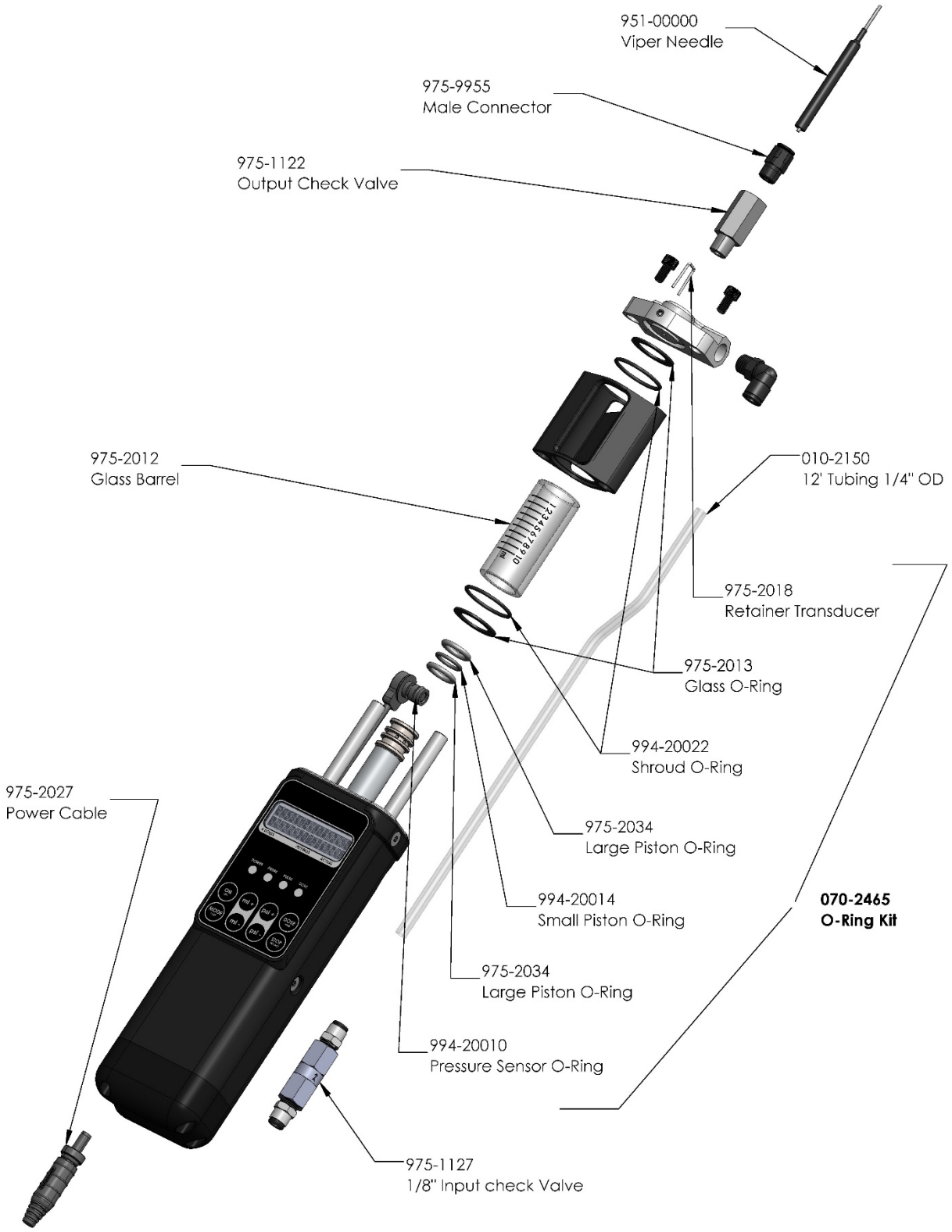
INTELI-jet Modes and Settings (Continued)

Settings:

- **ON/OFF:** use the green ON/OFF button to power the device. Press once; power light turns on, display shows “INTELI-jet by Arborjet”; then indicates “Prime Mode”. Press a second time to power off; display shows “Good-Bye” before powering down.
- **Product Volume**: use dark blue ml + & ml - buttons to set the desired product volume to be injected per dose (maximum volume per dose is 999 ml). Press and release the buttons to change volume in increments of one or hold down the buttons change volume in increments of ten.
- **Injection Pressure** use light blue psi + & psi - buttons to set desired maximum pressure (at 10 psi increments) used to push product into the injection site. The maximum pressure setting is 200 psi.
- **Dose/Prime**: use the grey dose / prime button to initiate priming event (when in Priming Mode) or injection of dose (when in Fixed, Active or Smart Modes).
- **Stop/Retract:** use the first press of the red stop / retract button to stop movement of piston during a priming or injection event. A second button press (within a few seconds of the first) will retract the piston to the start position.

NOTE: When using the settings buttons, press and release the buttons quickly for best results.

Exploded Views & Part Numbers



Routine Maintenance – O-Ring Replacement

O-Rings should be replaced annually or in the event of O-Ring breakage or failure. In order Refer to exploded view for correct orientation.

O-Ring Replacement Kit (070-2465) contents:

A. Quantity 2, Large Piston O-Ring, P/N 975-2034
B. Quantity 1, Small Piston O-Ring, P/N 994-20014
C. Quantity 1, Pressure Sensor O-Ring, P/N 994-20010
D. Quantity 2, Shroud O-Ring, P/N 994-20022
E. Quantity 2, Glass O-Ring, P/N 975-2013
F. Quantity 1, Retainer Transducer, P/N 975-2018
G. Quantity 1, Molykote® Grease Packet, P/N 975-9960

Routine Maintenance – Check Valve Replacement

Over time Check Valves can acquire build up or debris that can prevent them from functioning correcting. Check Valves should be kept clean and maintained. Replace annually or in the event of a Check Valve failure.

Check Valve Maintenance

- Check to see if Valve Plunger is operating correctly
  - Remove Valve from device and use a needle to test the internal valve plunger's movement. The internal plunger should move and retract smoothly.
  - If the plunger is not moving or does not retract, soak the Check Valve in a CLEAN-jet solution for 10-15 minutes to help remove debris/clogs.
  - Add a drop of 3-in-1 Oil or similar lubricant into the valve to help promote movement.
- If the valve is still stuck, replace valve.

Inline Check Valve (975-1122)
Note arrows to indicate direction of flow

Output Check Valve (070-2366)

Refer to exploded view for placement of both the Inline and Output Check Valves. Please note that Inline and Output Check Valves are separate parts and are interchangeable. Not directional arrows for proper flow of the Inline Check Valve.

Troubleshooting Guide

In addition to the tips below, our YouTube channel and website are filled with informational videos that can help with issues that may arise while using your INTELI-jet.
YouTube Channel: YouTube.com/Arborjet
Website Support Page: https://arborjet.com/equipment-support-registration/

PROBLEM: Device not powering on

- Check battery charge – LED light indictors on battery provide confirmation of battery level
- Check that male cable is fully inserted on both the device and the battery housing. Use the wire nut to screw the cable into the device more securely.

PROBLEM: Screen not displaying correctly

- If the On-Screen Display is not showing information correctly, turn the device off and back on again to reset the display.

PROBLEM: Device buttons are not responsive or functioning properly

- Try pressing and releasing the buttons more quickly. Holding buttons down may cause them to become unresponsive. The only exception is the ml +/- buttons, which can be held down to increase volume in increments of ten.

PROBLEM: Device won't draw in or deliver product

- Confirm product is in the supply bottle and the Cap Assembly is attached properly.
- Check and secure all product supply line attachments
- Review Check Valves – see pg 18 for troubleshoot Check Valves
- Overtime the internal piston sleeve may wear down or swell with use and need replacing – contact customer support to initiate repair or replacement for this item.

Troubleshooting Guide - Continued

PROBLEM: Check-Valve failures

- If the device will not draw product into the supply line, check that the Inline Check Valve is install correctly. It is a one-way valve with directional arrows etched into the middle of valve.
- If the device is drawing product into the supply line, but not delivering product, remove the Output Check Valve and soak it in a Clean-jet solution for 15 minutes to remove debris.
- If above troubleshooting does not resolve the issue, Check Valves may need to be replaced.

PROBLEM: Device leaking from needle

- Is product leaking from push to connect?
  - Make sure needle is seated properly.
- Leaking from tip of needle?
  - Replace Output Check Valve (valve before push to connect fitting at front of device – see exploded view on page 14)

PROBLEM: Product Leaking from product supply bottle

- Is product bottle adapter screwed on tightly?
  - If not, tighten bottle into adapter by turning clockwise (screw on carefully, making sure threads don't cross)
- Is gasket in bottle adapter worn or damaged?
  - If yes, replace rubber gasket.

PROBLEM: Product leaking from Arborplug

- Is the Arborplug set at an incorrect depth (See pg. 27 for reference)
  - **Too shallow – leaks from around injection site**
    - Tap Arborplug further into injection site so barbs catch xylem tissue and not bark.
  - **Too deep – injection site over-pressurizes and membrane ruptures.**
    - Drill, plug, and inject a new site.

If after troubleshooting, your device is still not functioning correctly contact your Arborjet Regional Technical Manager (RTM) or the Arborjet office for support.

INTELI-jet Replacement Parts

Part No.	Item Description
070-2450	INTELI-jet Device ONLY
070-2455	INTELI-jet Battery Kit: Includes Battery, Housing Connector and Battery Charger
975-2056	18v/2.6Ah Lithium Ion Battery (INTELI-jet Battery)
070-2460	Battery Housing Connector
975-2057	Battery Charger
975-2027	INTELI-jet Power Cable
070-2465	INTELI-jet O-Ring Kit
975-2012	INTELI-jet Glass Barrel
070-2366	Inline Check Valve
975-1122	Output Check Valve
070-0501	VIPER Needle 4pk – VIPER Needles

INTELI-jet Accessories

Part No.	Item Description
070-0094	VIPER Valve Assembly 2pk – VIPER Needles, Inline Valve Assemblies
070-0096	VIPER Valve Assembly 2pk – VIPER Needles, Elbow Valve Assemblies
070-0336	STINGER Needle Valve Assembly 4pk – STINGER Needles & Valves
070-2365	3 ft. of 1/4" Lead Line Extension Kit
070-0100	10/32" to 1/4" PTC 4pk – Push To Connect Fittings, 5/64" Hex Key
975-1124	1/8" Male NPT to 10/32" Adaptor
070-0085	Hex PDS Manifold – Hex Manifold, Tubing
070-0077	FSeries Expansion Kit – Hex Manifold, Tubing, Valves, Needles
070-0104	Mixing & Measuring Kit – Funnel, Cylinder, Mixing Container
070-2200	Medicament 1L Bottle Assembly
070-0660	Drill Bit 2pk – 3/8" Bit and 9/32" Bit
070-0130	VIPER Needle Clean-out Tool 2pk – Stainless Steel wires with grip
070-0120	Arborplug™ Setter 2pk – Tools for setting Arborplugs
030-2030	Clean-jet solvent (1L Bottle)
070-2371	Carry Bag
070-3425	18v/5.2Ah Lithium Ion Battery (AccuFlo ISD / Larger Battery)

Cleaning the INTELI-jet System

CLEAN-jet solution is an all-purpose cleaner and lubricant for all Arborjet injection devices. It may be used to prime or test the INTELI-jet system and is also designed as a short-term storage solution for all Arborjet devices. If storing for more than one day, flush with water before treatment.

Cleaning Process

1. Before cleaning, make sure all product has been drained from INTELI-jet supply lines and bottles.
2. Remove Cap Assembly and add 20-30mL of CLEAN-jet to the empty Medicament Bottle
3. Replace Cap Assembly on Medicament Bottle and connect supply lines to the device.
4. Turn on device in prime mode and open valves until the system has been purged and cleaned-out, then rinse with water to preserved device.

** CLEAN-jet rinse can be squirted into the soil at the base of the tree unless near ground water or waterways*

** Be sure to rinse all CLEAN-jet out of the bottle, tubing, and device*

** CLEAN-jet should never be mixed with other formulations*

** Dispose of waste according to state and local regulations*

Storing the INTELI-jet and Battery

The INTELI-jet should be operated and stored at temperatures between 32–100°F (0-38 °C).

Please follow these steps when storing the INTELI-jet for a prolonged period of time to prevent corrosion to the INTELI-jet body, manifold and tools:

- Clean and dry the device, lines and Medicament bottles using CLEAN-jet (see page 21 for details)
- Disconnect the INTELI-jet from products and from the battery kit prior to storage.
- Oil metal components, especially Quick Disconnect on HEX PDS Manifold and male Quick Disconnect on the INTELI-jet
    - use 3 in 1 oil (preferred) or WD-40.
- Grease O-Rings using Krytox™ or Molykote
- Coat tools with 3 in 1 oil (preferred) or spray with WD-40
- Store bottles empty
- Store the INTELI-jet and battery components in a cool, dry place away from moisture and in temperatures between 32-80°F

WARNING: The INTELI-jet Battery is a Lithium-Ion Battery. Exposure to fire or temperature above 265˚F (130˚C) may cause explosion.

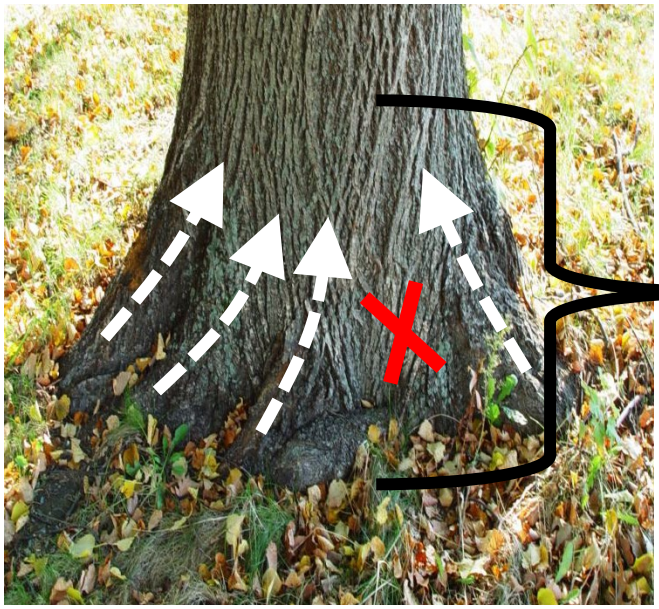
Appendix: Tree Injection Tips & Techniques

- Selecting ArborPlug Injection Sites
- Calculating Dosage of Injection Sites
- Tree Drilling Techniques
- Setting the ArborPlugs
- Plugless Injection
- Conifers vs Deciduous Trees

Selecting Arborplug Injection Sites

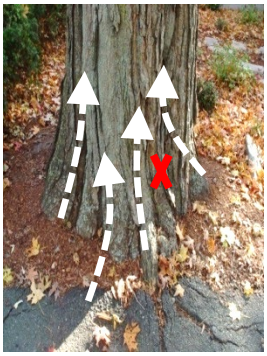
To determine how many Arborplugs will be needed per tree, use the following calculation: DBH" ÷ 2

ex) 24" DBH / 2 = 12 Plugs → 12 Arborplug sites will be acceptable for this tree



Sites must be plugged within 36" of the soil line. Avoid plugging in between flares, damaged areas, and tree crotches.

Root Flares provide the best uptake and product distribution to the canopy.



ARBORJET Revolutionary Plant Health Solutions

Calculating Dosage of Injection Sites

1. Determine the Diameter at Breast Height (in.)

Measure tree diameter in inches, at breast height by using a diameter tape, OR measure circumference and divide by Pi (3.1415).

Arborjet DBH" Measuring Tape

2. Carefully read label of Product to be Injected

Use DBH" to determine total injection volume for treatment application.

INTELI-JET WARRANTY IS VOID WITH USE OF NON-ARBORJET APPROVED FORMULATIONS

3. Using the Graduated Cylinder and Funnel provided with your Kit, measure the calculated volume and pour liquid into Medicament Bottle or attach Cap Assembly to Product Bottle

Be sure to wear Safety Glasses and Nitrile Gloves when handling Product to be Injected.

Tree Drilling Technique

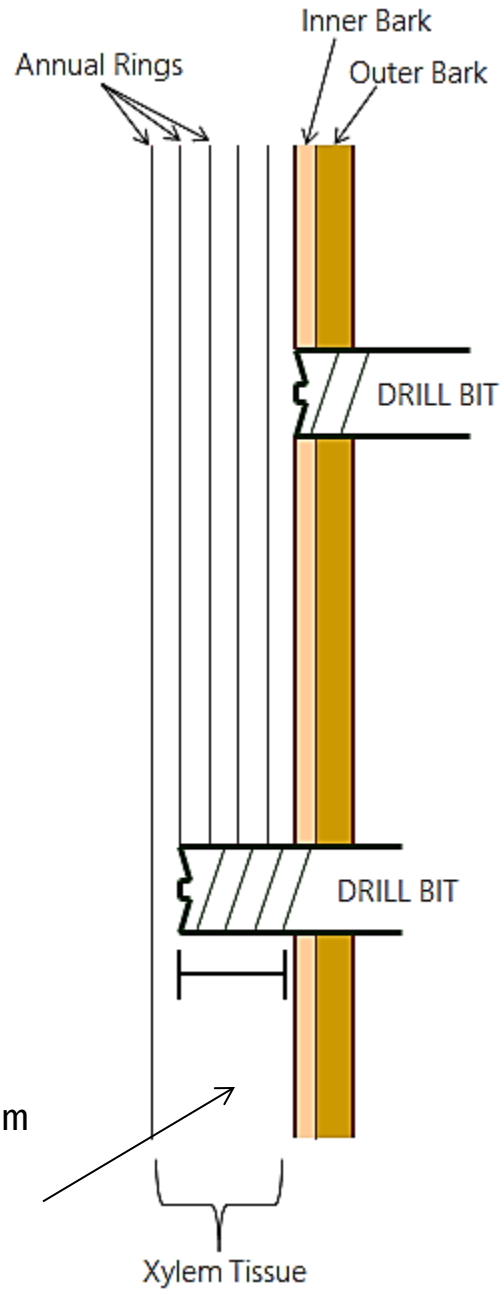
Your INTELI-jet Kit comes with two High Helix Brad Point Auger Drill Bits designed specifically for Arborplug drill sites.

#3 Arborplug™ - 9/32" Drill Bit

#4 Arborplug™ - 3/8" Drill Bit

Drilling in Two Steps:

1. Using light pressure, drill through the outer and inner bark. Once you reach the Xylem, you will feel greater resistance on the bit.
2. Remove the bit, noting the thickness of the bark. Re-insert the bit and use heavy pressure to drill into the Xylem Tissue.



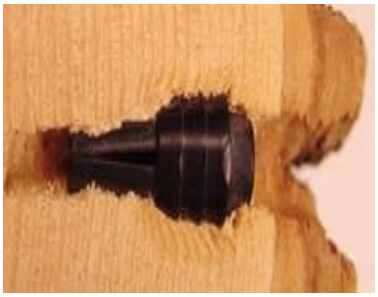
Setting the Arborplugs®

The effectiveness of the INTELI-jet system is dependent upon the user properly setting the Arborplugs into the xylem tissue of the tree to be injected.

Select the correct Arborplug based on the bit used to drill the tree.

Using the Arborplug Setter provided with your kit, hammer the Arborplug until the barbs make a seal between the xylem and inner bark as illustrated below

Too Deep



Results in slower uptake

Too Shallow

Causes damage to the bark and cambium layers

Just Right

Best results with fast uptake and no damage to the tree tissue

STINGER Needle – Injecting without Arborplugs

When applicators choose to make plugless injections, we recommend using the Arborjet STINGER Needle.

Plugless applications are most efficient on trees with moderate to rapid translocation when low volumes of solution are required.

STINGER Injection sites should be low on the tree, close to the soil line, avoiding injured areas of the trunk

STINGER Needle & Valve Assembly with Line Extension

Injection Process

1. Angled downward slightly, Drill injection sites with a 7/32" bit, favoring trunk flares. Drilling depth should be 1/2" to 1" into the Xylem.
2. Insert STINGER Needle(s), seating with a slight twist placed in the 1st and 2nd year growth ring. Do not force.
3. Inject proper dose and repeat as needed.

Tulip Poplar is a suitable choice for plug-less STINGER Injection

INTELI-jet Treatment: Conifers vs. Deciduous Trees

Conifers – Cone bearing trees

Sap will flow out of conifers as a protective response to drilling, therefore if too much time has passed between setting and injection, sap may flow into the injection site. Arborplugs are highly recommended for conifer injections.

1. Prepare the INTELI-jet system and prime the supply line
2. Drill and set one Arborplug at a time
3. Insert Viper Needle and initiate injection
4. Repeat steps 2 and 3 for the remaining injection sites

Deciduous – Trees that seasonally shed leaves, petals, or fruit

Sap will not flow out of deciduous trees after drilling, therefore you can drill and set all Arborplugs before beginning injection process or use plugless or HEX PDS options.

When using the HEX PDS with deciduous trees, drill, set and insert the needle into each injection site. Open all needle valves first, then initiate injection. This will ensure that even distribution of product occurs at each injection site.

Contacting Arborjet

Arborjet, Inc.
99 Blueberry Hill Rd.
Woburn, MA 01801

Phone: 781-935-9070
Fax: 781-935-9080
info@arborjet.com

@arborjetecologel

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