

FSERIES[®]

TREE I.V.



User Manual

ARBORJET[®]
Revolutionary Plant Health Solutions

Introduction to Arborjet's FSeries Micro-Infusion™

Arborjet's FSeries Micro-infusion™ system was developed to effectively deliver high volumes of injectable product into the sapwood of any type of tree.

It enables the applicator to precisely deliver an accurate, measured dose of insecticide, fertilizer or fungicide into the xylem tissue in a safe and environmentally friendly way.

The FSeries can utilize either VIPER or STINGER micro-infusion interface technology.



VIPER	STINGER
<p data-bbox="221 937 621 1033">Volume Injection Pressure Enhanced Reservoir</p> <ul data-bbox="157 1062 642 1410" style="list-style-type: none">• Inject via Arborplug®• Fast uptake• No leakage• Faster wound closure• Can be used on Conifers• Suitable for infection-prone trees	<p data-bbox="813 956 1199 1014">Stick -> Inject -> Remove</p> <ul data-bbox="742 1062 1256 1313" style="list-style-type: none">• Inject without Arborplug®• Faster set up• Simple injection process• Best for Ring Porous Trees• Can be used by Non-Arborists
	

Table of Contents

1. What's included in your FSeries Kit
2. Three Easy Steps for Using the FSeries System
3. FSeries Systems in Use
4. How to Assemble the FSeries
5. Before Your First Injection...
6. Preparing the FSeries for Micro-Infusion™
7. Selecting your Arborplug™ Injection Sites
8. Tree Drilling Technique
9. Setting the Arborplugs™
10. Pressurizing and Priming the Supply Lines
11. Using Multiple FSeries Systems
12. Large Tree Micro-Infusion™
13. Cleaning the FSeries System
14. FSeries System Maintenance
15. Treatment: Conifers vs. Deciduous
16. STINGER Needle: Plug-less Injection
17. FSeries Replacement Parts List
18. Exploded Views & Contact Info



What's Included in your FSeries Kit

F-12 Kit : 070-0055



- 1.5L Cap & Bottle Assemblies (2)
- 650mL Cap & Bottle Assemblies (2)
- Extra 1.5L & .65L Bottle
- Hex PDS Manifolds (2)
- FSeries Bottle Stands (2)
- VIPER Needle Clean-out Tools (2)
- FSeries Tool Kit
- High Performance Pressure Pump
- FSeries Connection Kit
- 3/8" & 9/32" Drill Bits
- Arborplug™ Setter
- Graduated Cylinder
- 500mL CLEAN-jet
- Funnel
- Manual & Warranty Card
- Carry Cup (2)
- Safety Glasses
- 5 Gallon Bucket

What's Included in your FSeries Kit

F-12 Pro Kit : 070-0058



- Complete F-12 Kit
- QUIK-Jet Device & Bottle Assembly

What's Included in your FSeries Kit

F-18 Kit : 070-0065



- Complete F-12 Kit
- FSeries Single Tree IV
- Extra 650mL Bottle

What's Included in your FSeries Kit

F-18 Pro Kit : 070-0068



- Complete F-12 Kit
- FSeries Single Tree IV
- Extra 650mL Bottle
- QUIK-Jet Device & Bottle Assembly

Three Easy Steps for Using the FSeries System

1. DRILL



2. PLUG



3. INJECT



**IMPORTANT
SAFETY REMINDER**



Always wear proper PPE when handling products and equipment

FSeries Systems in Use



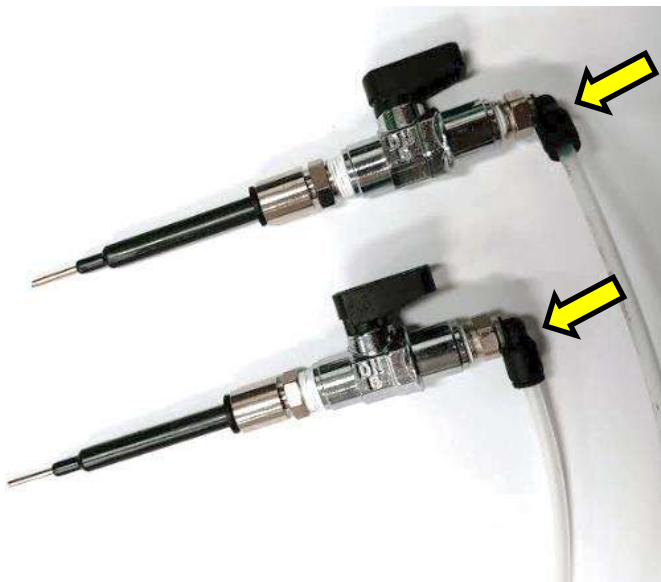
How to Assemble the FSeries

1. Insert VIPER Needles firmly into 1/4" Push-Io-Connect Fittings*



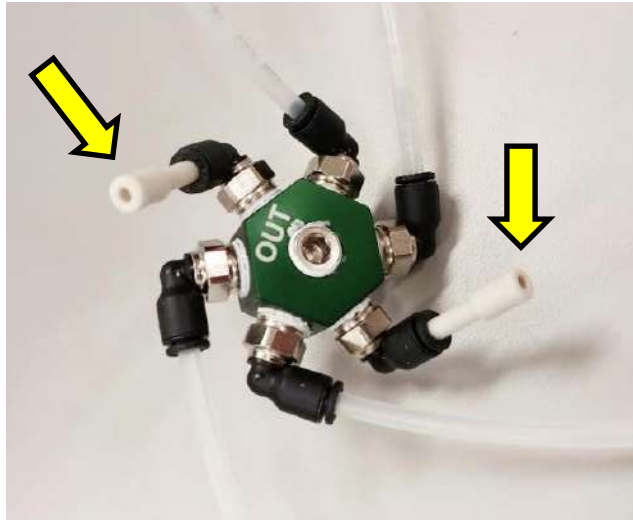
*To release VIPER Needle or Tubing from PTC, press on plastic ring while pulling object out of the fitting

2. Insert 5/32" Lines into 5/32" Elbow PTC Fittings



How to Assemble the FSeries

- Depending on the DBH of the tree, you may not need all 6 lines of tubing coming from the Hex PDS. Insert plugs into elbow fittings if not needed



- Connect 1/4" Tubing from Hex PDS Manifold to 1/4" PTC on FSeries Cap Assembly



Before Your First Injection...

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 testing fittings with a torque wrench, pressure testing the FSeries Bottles, 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

Preparing the FSeries for Micro-Infusion™

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.

Keep in mind, the maximum capacity of the FSeries 1.5L Bottle is 1L, and max for .65L bottle is 400mL allowing space for pressurized air.

TREE IV WARRANTY IS VOID WITH USE OF NON-ARBORJET APPROVED FORMULATIONS

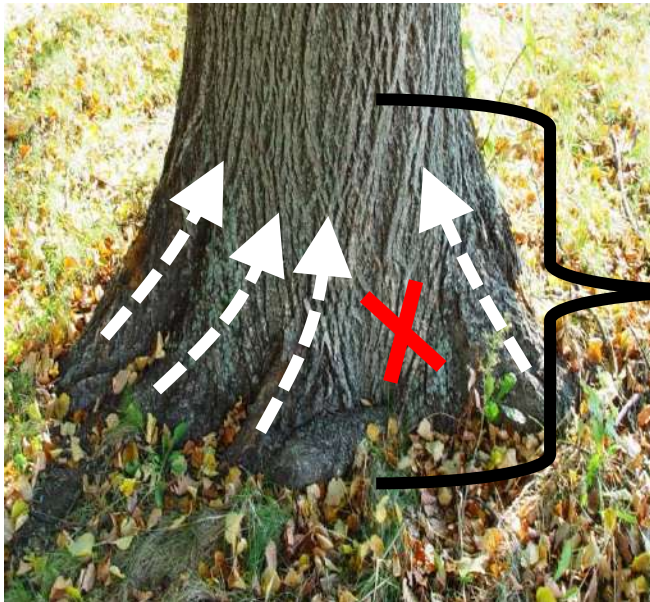
3. Using the Graduated Cylinder and Funnel provided with your Kit, measure the calculated volume and pour liquid into FSeries Bottle.

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

Selecting Arborplug™ Injection Sites

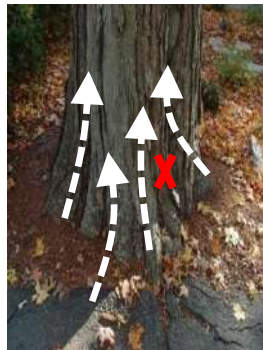
To determine how many Arborplugs™ will be needed per Tree, use the following calculation: $DBH'' \div 2$

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.



Tree Drilling Technique

Your FSeries Kit comes with two High Helix Brad Point Auger Drill Bits designed specifically for Arborplug™ Drill Sites



#3 Arborplug™ - 9/32" Drill Bit

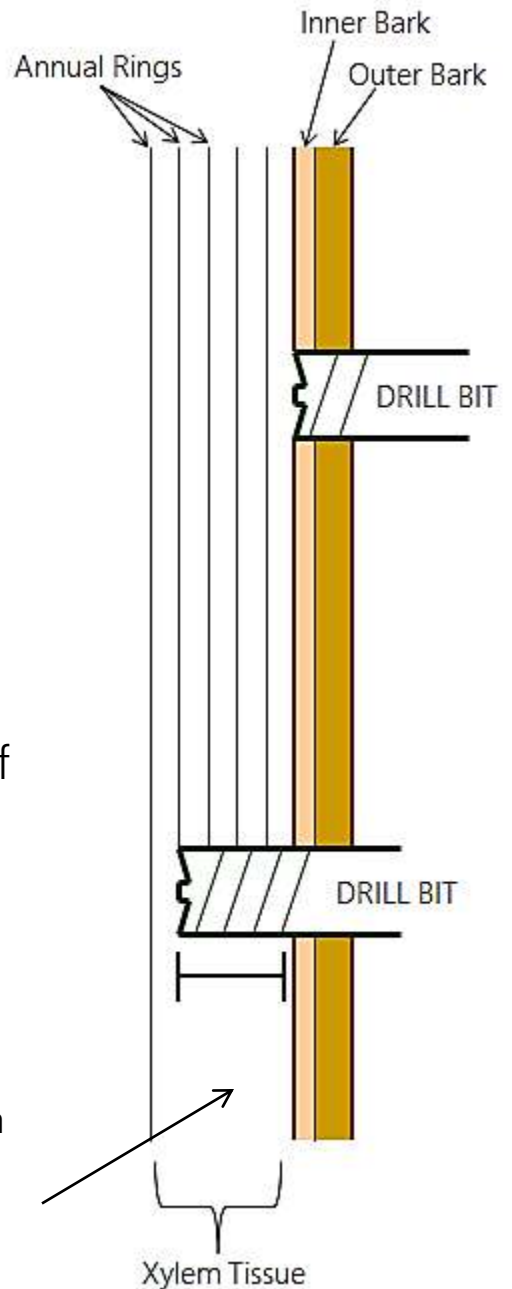


#4 Arborplug™ - 3/8" Drill Bit

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.

5/8" – 2" into Xylem



Setting the Arborplugs™

The effectiveness of the TREE IV 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

Pressurizing, Priming, and Opening Supply Lines

1. Ensure Pressure Release Valve on Cap Assembly and VIPER Valves on Manifold are closed.



OPEN



CLOSED



OPEN



CLOSED

2. Connect the Pressure Pump hose to the Quick Disconnect on the Cap Assembly



3. Begin by pumping the Pressure Pump until psi reaches 35 - 120 psi.
- The Cap Assembly has a blow-off valve which will activate when psi reaches 120 (max).

Pressurizing, Priming, and Opening Supply Lines

Before inserting VIPER Needles into the Arborplugs™, you must prime and bleed the lines to prevent air from being injected into the tree.

4. Turn Pressure Release Valve counter-clockwise to release fluid into the lines



It's recommended to have a waste bucket nearby for bleeding lines or flushing with CLEAN-jet through device after use.

5. Open each VIPER valve briefly, bleeding a small amount of fluid into a waste bucket, then close the valve and insert into an Arborplug™. Repeat steps for all remaining VIPER Valves.



OPEN POSITION

6. Once all VIPER Valves have been bled and inserted into Arborplugs™, open each valve, allowing product to flow into the Tree.

Using Multiple FSeries Systems

The F12 Kit comes equipped with two complete FSeries Systems, allowing you to treat more than one tree at a time.

1. Begin by plugging and injecting Tree #1
2. While uptake is occurring, move on to treat Tree #2
3. By the time you finished setting up Tree #2 for uptake Tree #1 has likely completed infusion
4. Remove the System from Tree #1, and begin preparing Tree #3
5. Continue this process, “leap frogging” from Tree to Tree, allowing you to treat a large area without having to wait for each tree to complete product uptake.*

*Conifers and some diffuse porous trees take longer to treat and may require using more than two TREE IV systems during this multi-treatment process



Large Tree Micro-Infusion™

If you need to use more than the maximum bottle capacity of product, or more than 12 Arborplug™ sites on a single tree, you have a couple different options for Micro-Infusion™ beyond re-pressurizing

Option 1 : Using More than One Bottle Per Tree



In the example shown here, the dose required was 1000mL, so the user put 500mL in two TREE IV bottles

Option 2 : Add on a FSeries Expansion Kit (070-0077)

The Expansion Kit is a full Hex PDS Manifold with 6 Valve Assemblies and 6 VIPER Needles

1. Remove 1/4" NPT Plug from one of the HEX PDS Assemblies, and replace with
2. Connect HEX PDS Manifolds via 4-foot length of 1/4" Tubing from one Manifold to the other.
3. Prime, Pressurize, & Inject



Cleaning the FSeries System



CLEAN-jet Solution is an all purpose cleaner and lubricant for all Arborjet injection devices. It may be used to prime the FSeries 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 Clean-out, make sure all product has been drained from TREE IV Bottles and supply lines.
2. Open Valve on Cap Assembly to release pressure
3. Remove Cap Assembly and add 20-30mL of CLEAN-jet
4. Replace Cap Assembly on TREE IV Bottle
5. Pressurize bottle, then open and close all VIPER Valves to clean

** 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*

FSeries System Maintenance

Cleaning Viper Needles

Remove clogged VIPER Needle from Valve Assembly then insert a VIPER Needle clean-out tool in and out of the Needle to free any obstructions



Trimming Supply Line Tubing

Occasionally you may need to trim the ends of the Supply Line Tubing to ensure a snug fit when inserting into PTC's



Lubricate O-Rings as Needed

You are provided replacement O-Rings with your F-12 Kit, but keeping them lubricated with Valve Grease can help extend their life



FSeries 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 Infusion, sap may flow into Injection Site.

1. Pressurize FSeries System and Prime each supply line
2. Drill and Set one Arborplug™
3. Insert Viper Needle and open Pressure Release Valve
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 Micro-Infusion™ process.

Follow the same steps used for Conifers, but open all Supply Valves Simultaneously.

Deciduous Tree Micro-Infusion™ occurs very rapidly. You can open all VIPER Needle valves first, then open the bottle top valve. This will ensure that even distribution of product occurs at each injection site.

STINGER Needle – Injecting without Arborplugs™

When applicators choose to make plug-less injections, we recommend using the Arborjet STINGER Needle.

Plug-less 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. Pump to 25psi, increasing moderately, until all fluid is dispensed

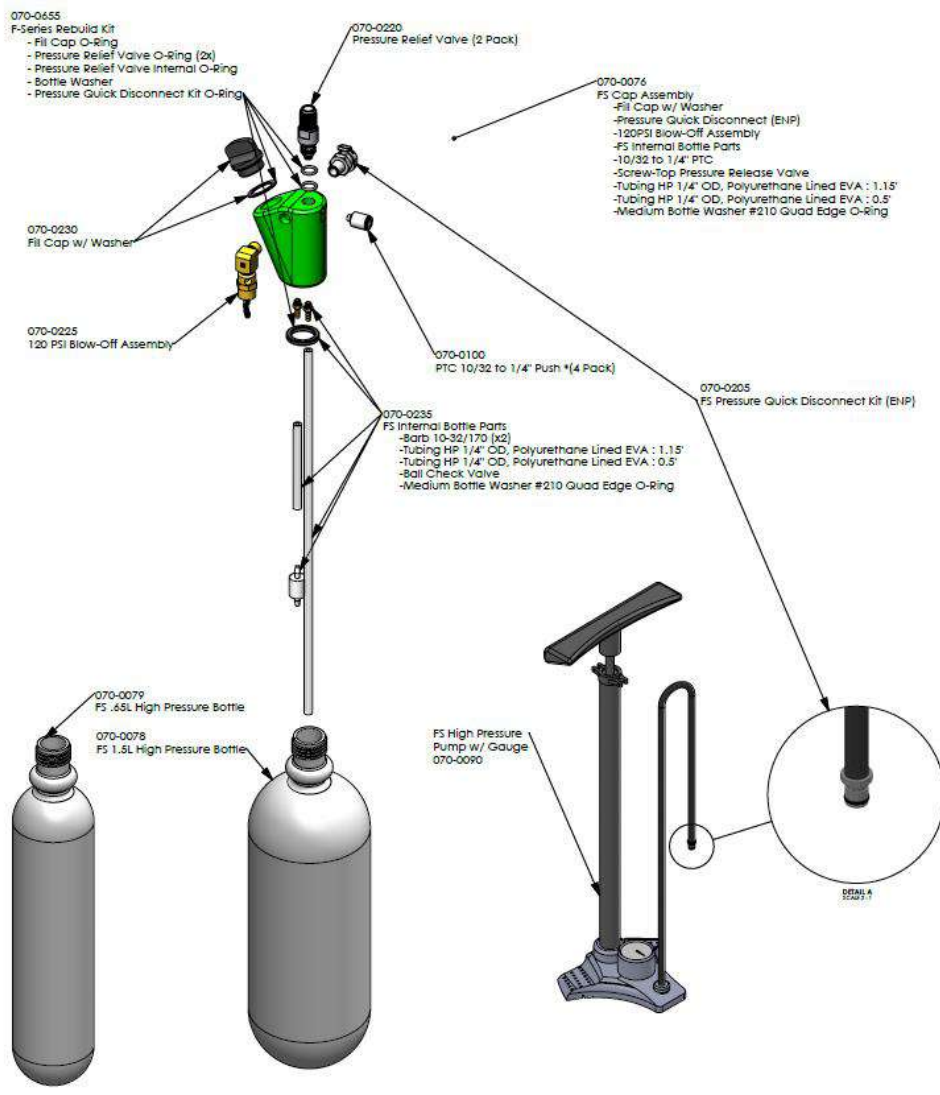


Tulip Poplar is a suitable choice for plug-less STINGER Injection

FSeries Replacement Parts List

Part No.	Item Description
070-0075	FSeries Single – Cap Assembly, Bottle, Lines, Valves, Needles. Stand
070-0076	FSeries Cap Assembly
070-0655	FSeries O-Ring Rebuild Kit – Set of Replacement O-Rings
070-0240	FSeries Tool Kit – Plug-setter, Drill Bits, Clean-out Tools, Hex Keys
010-7016	FSeries Expansion Kit – Supply Line Expander, Tubing, Valves, Needles
070-0108	Hex PDS Manifold – Supply Line Expander, Tubing
070-0109	Arborjet Internal Bottle Parts – Tubing, Check Valve, Barbs
070-0336	STINGER Needle Valve Assembly 4pk – STINGER Needles & Valves
070-0205	Pressure Quick Disconnect Kit – Hose Barb, Clamp, and QD
070-0501	VIPER Needle 4pk – VIPER Needles
070-0094	VIPER Valve Assembly 2pk – VIPER Needles, Inline Valve Assemblies
070-0096	VIPER Valve Assembly 2pk – VIPER Needles, Elbow Valve Assemblies
070-0100	10/32” to 1/4” PTC 4pk – Push To Connect Fittings, 5/64” Hex Key
070-0210	FSeries TREE IV Stand 4pk
070-0104	Mixing & Measuring Kit – Funnel, Cylinder, Mixing Container
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
070-0215	6 Gallon Bucket – Black Arborjet Bucket with drilled holes
070-0120	Arborplug™ Setter 2pk – Tools for setting Arborplugs

F-Series Exploded View Parts List



Contacting Arborjet

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

Phone: 781-935-9070
Fax: 781-935-9080



@arborjet