

RECOMMENDED INSTALLATION INFORMATION

Techline is designed for use in landscape applications under turfgrass or other groundcover, trees and shrubs, and where these conditions are present:

- Curved, angular, or narrow landscape features
- Landscape features that are terraced or include elevation changes
- Specialty plantings where water on petals is undesirable
- High traffic and/or liability areas
- Sites subject to vandalism
- High wind areas
- System operation time constraints
- Sites where overspray onto hardscapes or automobiles is undesirable
- Virtually any area where an irrigation design problems exist.

METHODS OF INSTALLATION INCLUDE:

1. Techline may be installed at grade using soil staples to hold the dripperline in place, spaced 3 to 5 feet apart, and with a 4 to 6 inch covering of mulch.
2. Techline may be buried 4 to 6 inches below grade by:
 - a. Trenching,
 - b. Laying out the dripperline on a sub-grade 4 inches lower than the specified final grade, and then backfilling to the final grade,
 - c. Using a vibratory plow. Care should be taken when using this method, as pulling the dripperline through the soil may stretch it. It is preferable to use an appropriate attachment to the vibratory plow which allows the dripperline to be “laid-in” behind the point/blade.
 - d. Using an insertion shank fastened to a tool bar on the back of a tractor, . Several insertion shanks may be used at once, spaced at the desired Techline spacing along the tool bar, allowing for multiple laterals to be installed simultaneously. The number of insertion shanks used depends upon site conditions, and the size of the tractor.

What ever installation method is used, it is recommended that a Netafim Techline system be installed utilizing a “grid” layout. There are many benefits, both horticulturally and from a maintenance standpoint, that make a “grid” installation highly recommended. However, Techline may be installed as a single or “snaked” line when a grid installation is not justified, such as hedgerows.

In any turfgrass area where aeration may occur, the minimum recommended depth is 6 inches, with aeration depth not to exceed 4”.

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Techline is 0.57" I.D. polyethylene tubing with continuously self-flushing, pressure compensating drippers fused to the inside wall of the tubing. Two dripper flow rates are available: .61 gph and .92 gph, with spacings of 12, 18, or 24 inches between drippers. Techline is available in 100', 250', or 1,000' rolls.

The drippers are designed to regulate flow from 7 to 70 psi, with a maximum of 45 psi when using Techline insert fittings without clamps. When installing Techline in situations where the working pressure exceeds 45 psi, stainless steel clamps are necessary.

The choice of Techline dripperline, dripper flow, and Techline lateral spacing depends on:

- The soil type (clay, loam, or sand)
- The type of plant material
- Other site conditions, such as slopes or berms

Deciding whether to install Techline above grade or below grade should be determined by site conditions, customer concerns, and maintenance issues.

INSTALLATION CHECKLIST

Project:

Date:

1. Assemble and install remote control valve, filter, and pressure regulator as indicated in Netafim detail(s) _____.
2. Assemble and install supply header as indicated in Netafim detail(s) _____. Tape or plug all open connections.
3. Assemble and install exhaust header as indicated in Netafim detail(s) _____. Tape or plug all open connections.
4. Install Techline laterals beginning at the start connection(s) indicated in Netafim detail(s) _____. Type and layout of Techline laterals are to be installed as specified, and/or as indicated in Netafim detail(s) _____. Tape or plug all open ends.
5. Install an air vacuum relief valve at the point of highest elevation in the zone as indicated in Netafim detail(s) _____.
6. Make all Techline-to-fitting connections while flushing the system. Make connections as indicated in Netafim detail(s) _____.
7. While flushing, connect Techline laterals to the exhaust header as indicated in Netafim detail(s) _____.
8. Install line flushing valve(s) as indicated in Netafim detail(s) _____.
9. Install other Netafim accessories as indicated in Netafim detail(s) _____.
10. Operate and inspect the system. Record system data for historical record. Use Netafim System Inspection Checklist, and Troubleshooting and Maintenance Checklist.

PREVENTIVE MAINTENANCE

Introduction

When designed and installed properly, Netafim Techline and Techlite irrigation systems offer the designer, contractor and system owner very high quality equipment, unparalleled performance, system reliability, and low maintenance. As with any irrigation system, it is important that it be designed according to the manufacturer's specifications and installed according to the designer's specifications. This guide will help properly maintain a Netafim Techline system, and provide troubleshooting tips. Please contact Netafim Customer Service at 1-888-NETAFIM with additional questions.

Disc Filters

Disc filters must be inspected and cleaned periodically.

The filter should be inspected monthly after installation, and then more or less frequently based on those observations.

To clean the disks, unscrew the bottom portion of the plastic housing or unlatch the band, exposing the spindle on which the discs are stacked. The spindle is held in place by snap-fit. To remove the discs, pull on the spindle. No special tools are needed. The discs can be cleaned in a bucket of water, or by spraying with a hose. The discs are stacked loosely on the spindle, and are easily separated for thorough removal of debris.

Commercial installations should include pressure gauges or facilities to connect pressure gauges immediately upstream and downstream of the filter. This allows personnel to determine when the filter needs to be cleaned by observing the pressure differential between the upstream and downstream gauges.

Filters should be cleaned when the pressure loss across the filter is between 5 and 10 PSI, or when the downstream pressure falls below the designed working pressure of the system. Record the pressure differential between the gauges when the system is installed as a reference for determining periodic inspection and cleaning.

Line Flushing Valves

Netafim Line Flushing Valves eliminate the need for periodic manual flushing. The flush valve flushes approximately 1 gallon of water each time the zone is turned on. Observe the flushing operation at each line flushing valve at the beginning of each irrigation season to ensure that flushing is occurring properly.

If the line flushing valve does not seal, (continues to flush) disassemble the flush valve. Inspect all components, cleaning or replacing all components, and reassemble. You should be able to blow and draw air through the dripper that is at-

PREVENTIVE MAINTENANCE

tached to the diaphragm, and the diaphragm should be free of any rips or tears.

Damage may occur if the flush valve has been subjected to higher than recommended pressure (>57 PSI).

If manual flush valves or flush ports have been installed in lieu of line flushing valves, they should be opened and the system flushed three (3) times each irrigation season until the flowing water is visibly clean. The zone may need to be flushed more frequently depending on the water source.

Flushing is also recommended anytime the system has been repaired.

System Inspection

A physical inspection of the zone is recommended after installation, at the beginning of each season, after any landscape planting, or after any maintenance that requires digging deeper than the installed depth of the Techline or Techlite.

System inspections include:

- Observe the flushing operation of all line flushing valves. Check the pressure at the flush valves and compare to the last maintenance inspection. The minimum pressure should be at least 10 PSI, and the maximum pressure should not exceed 57 PSI. (Refer to the Netafim Landscape products catalog for maximum and minimum pressures for Techlite zones.)
- Inspect the zone while it is operating, looking for excessively wet or dry areas that might indicate leaks. If a leak is found, and the system is installed as a grid or closed loop system, water will flow from both sides of the break. With the zone still on, allow the running water to flush any debris clear, and repair the leak with the appropriate fitting.
- Check the operational flow of each zone to see if it coincides with the designed or initial flow of the zone. Higher flow could indicate a leak. Locate any wet areas and repair. Lower than expected flows could indicate clogged drippers or kinked dripperline tubing.

A historical record of the system should be kept. Recorded data should include:

- Type of Techline or Techlite installed (dripper flow and spacing)
- Techline/Techlite lateral spacing
- Depth of the Techline/Techlite if buried
- Initial zone flows and pressures
- Initial pressures at the flush points

WINTERIZATION

Techline and Techlite dripperlines are self-draining. Each time the zone shuts down, some water drains out of the tubing. Winterization is required as a good maintenance practice because every zone contains components that **must** be winterized to ensure they do not freeze and break.

Winterization - Manual

If compressed air is not used to winterize the system:

- A drain port must be installed at **all** low points in the zone. These ports may be a tee or elbow with a threaded plug, or a Netafim TLISOV or FIG8 which, when opened, will allow water to drain. If Netafim Line Flushing Valves are installed, disassemble and leave open.
- If the zone is a grid or closed loop system, the supply and exhaust headers may contain a significant amount of water because they are either blank Techline/Techlite tubing, PVC, or poly pipe. It is important to provide drain ports for these components.
- If the zone has laterals that dead-end and are not connected to an exhaust header, the lateral ends should be opened to drain at the lowest point(s).
- The disc filter should be disassembled, and the discs removed to allow any water to exit. Leave the filter assembly disassembled in the event that some water remains in the zone. In zones where elevation is a concern, install a drain port upstream of the filter to ensure as much water is drained as possible.
- Follow manufacturer instructions for any non-Netafim components, including remote control valves.

Winterization - Compressed Air

Follow the same initial procedure for a Techline/Techlite zone as with a zone of sprinklers.

- Techline fittings are rated to 45 PSI without clamps, so the air pressure must be adjusted according. It is air *volume*, not pressure that is effective when winterizing in this manner. (12mm Techlite fittings are rated at 30 PSI and 8mm Techlite fittings are rated at 25 PSI.)
- The Pressure Regulating Valve, which is normally installed in the valve box along with the zone valve and filter, **does not** regulate air pressure. Air pressure should be regulated to according to the dripperline being used.
- The drain ports (a fitting with a threaded plug, NETAFIM TLISOV, FIG8, or Netafim Line Flushing Valve), normally installed as far away from the water source of the zone as possible, must be open. Unscrew and disassemble any Techline Line Flushing Valves.
- With all drain ports open, compressed air should be applied until no water is seen exiting the zone.
- All drain ports should be left open.

TROUBLESHOOTING **Excessively Wet Soil**

1. In an excessively wet area, carefully dig up the Techline tubing with the system operating, and inspect for damage. If a leak is found, expose the tubing and cut through the tubing, cleaning the break. If the zone is a grid or closed loop, water should be flowing from both sides of the break, flushing any debris. (If water is not flowing from both sides of the break, another leak may be present). With the water running, insert a Netafim coupling or other appropriate fitting. Inspect for a proper fit and re-fill the area. No clamps are necessary under 45 PSI.
2. If a wet area is at the bottom of a slope or mound, and no leak is found, the wet area may be due to subsurface leaching. Expose the lowest dripper(s) at the bottom of the slope, and plug them with Netafim Dripper Plug Rings (TLDPLUG). If it is necessary to eliminate an entire Techline lateral, cut the lateral just beyond the supply and exhaust headers, and close the pressurized ends with a Netafim Figure Eight Line End (TLFIG8). The eliminated lateral can then be left in place, or removed.
3. Localized wet areas are sometimes caused by shallow soils covering ledge or other impervious layers. The soil problem should be corrected, drippers eliminated, or reduced in number.
4. Wet areas can also be the result of leaking fittings. Expose the fitting to see if it is cracked or defective. Replace as necessary. If the fitting is sound, but appears to have worked loose, check to see that pressure in the zone does not exceed 45 PSI for Techline or per catalog specs for Techlite.

Please note:

- Netafim Techline fittings are designed to be used without clamps when operating pressures are under 45 PSI. Higher pressures will cause the fittings to work loose. If the pressure is over 45 PSI, check that a pressure regulator has been installed. If one is present, make sure that it is designed to work with the GPM flow you have in the zone, and that it is designed to reduce pressure to 45 PSI or less.
- Netafim Techline fittings are the only fittings recommended for use with Techline. Other types of fittings may appear to fit, but may not be suitable for the dimensions of Techline tubing, or certain operating pressures.

TROUBLESHOOTING **Excessively Dry Soil**

Dry soil areas in a properly designed and installed system usually occur when the operating pressure of the Techline zone is below 7 PSI. In this case:

- Check the filter and clean as necessary
- Check the remote control valve to make sure it is operating properly, and that the flow control (if present) is open
- Verify that all components meet the design parameters of the zone
- Check the historical record of initial and subsequent pressure readings, Techline type and spacings, and controller run times.

Dry areas can also occur when dripperline laterals have become kinked or when there are upstream leaks.

If debris intrusion caused by an upstream break between the filter and the dripperline occurs, drippers could become blocked temporarily, causing dry spots dry areas. If this occurs:

- Repair the leak
- Disassemble all Line Flushing Valves (or open all line ends and flush ports)
- Run the zone until all debris is purged
- Reassemble the Line Flushing Valves and operate the system, checking random drippers for proper operation
- If the pressure at the flush valves is higher than the historical record indicates, some drippers may still be clogged

Repeat the above procedure until the readings match historical records.

SYSTEM MAINTENANCE & TROUBLE- SHOOTING CHECKLIST

FILTER MAINTENANCE

Check Filter

If pressure gauges are present: Upstream _____PSI Downstream _____

- A pressure differential of 5 PSI indicates that the filter must be cleaned. Remove disc stack and rinse with water and replace.

The frequency of this procedure depends upon the water source. Check monthly until a more accurate maintenance schedule can be determined.

Recommended filter maintenance interval: _____

FLUSH POINT

Check Automatic Flush Valve Operation

- The Netafim Line Flushing Valve should flow approximately 1 gallon and seal.
- The Netafim Line Flushing Valve should be at the point of lowest pressure within the zone.

Pressure at Flush Valve: _____PSI

Compare to historical data. There should be a minimum of 10 PSI and no more

SYSTEM OBSERVATIONS

Controller Run Times Checked

- Compare the controller runtimes and frequency to the application rate for Techline at the spacing used. If the amount of water in inches/hour is insufficient or exceeds the requirement of the plant, adjust accordingly, Also compare the rate flow per zone with the historical record, using a stop watch at the water meter.

Check lines during system operation. Wet spots in unwanted areas may indicate a leaky fitting or a cut in the Techline. Dry areas may be the result of a

Wet areas observed

Check for Fitting Leak

Check for Techline Break

Dry areas observed

Line ends/flush points opened and system flushed

Project: _____ Date: _____ Inspected by: _____

Refer to the Netafim Troubleshooting and Maintenance Guide for Additional Information. Netafim Customer Service (888) NETAFIM (638-2346)

**SYSTEM
 MAINTENANCE &
 TROUBLE-
 SHOOTING
 CHECKLIST**

SITE INFORMATION:

Soil type
Plant material(s)
Slope orientation
Water type
Working pressure
Rate of flow

SPECIFICATION:

Techline dripper spacing
Dripper flow rate
Techline dripperline spacing
Total zone flow
Zone valve size
Pressure rating
Flow rating: LF ____ HF ____
Supply and exhaust header size
Application rate (inches per hour) _____

CALCULATIONS:

SYSTEM INSPECTION CHECKLIST

Techline Dripper Spacing	12" <input type="checkbox"/>	18" <input type="checkbox"/>	24" <input type="checkbox"/>
Techline Lateral Spacing	12" <input type="checkbox"/>	18" <input type="checkbox"/>	24" <input type="checkbox"/>
Dripper Flow Rate	.4 gph <input type="checkbox"/>	.6 gph <input type="checkbox"/>	.9 gph <input type="checkbox"/>

On Surface Installation Sub-surface Installation Depth Below Grade _____"

Pressure Regulator Type 3/4" .5 gpm flow (Red Cap)

3/4" 5-20 gpm flow (Black Cap)

15 psi 20 psi 25 psi 35 psi 45 psi

Disk Filter Size	3/4" <input type="checkbox"/>	1" <input type="checkbox"/>	1 1/2" <input type="checkbox"/>	2" <input type="checkbox"/>
Disc Filter Mesh	80 <input type="checkbox"/>	120 <input type="checkbox"/>	140 <input type="checkbox"/>	200 <input type="checkbox"/>

Operating Pressure _____	Pressure: 1.Flush Valve _____	2.Flush Valve _____ (if used)
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Controller Data

	Run Time	X/Week	Flow
Station #			
Station #			
Station #			
Station #			

Project:	Date:	Inspected by:
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Use the reverse of this sheet for additional comments/notes. Attach as-built plan. Netafim Irrigation Customer Service (888) NETAFIM (638-2346).