

## **BIOLINE 17 SELF- CLEANING, PRESSURE-COMPENSATING NON LEAKAGE TUBING**

### **Description**

Bioline tubing is a low volume dripline with integral and evenly spaced pressure compensating drippers at specified intervals with a flow rate of 1.6 or 2.3 L/hr. Bioline incorporates a Non-leakage mechanism, mechanical root intrusion barrier and silicon diaphragm. Bioline tubing is available in 50 or 200m coils. Bioline 17 shall be purple in colour to indicate re-use water being used in the system.

### **Construction**

Bioline 17 shall consist of nominal sized 14.4mm low-density linear polyethylene tubing. The Bioline tubing is available with internal pressure compensating, continuous self – cleaning, integral drippers at a specified spacing (0.3, 0.4 & 0.5 centres) or blank tubing without drippers. The tubing shall be purple in colour and conform to an outside diameter (OD) of 17 mm and an inside diameter (I.D.) of 14.4 mm. Individual pressure compensating drippers shall be welded as an integral part of the tubing assembly. These drippers shall be constructed of plastic with a hard plastic diaphragm retainer and a silicon diaphragm extending the full length of the dripper.

### **Operation**

The drippers shall have the ability to independently regulate discharge rates, with an inlet pressure of 100 – 350 kPa, at a constant flow. Bioline emitter features an anti-vacuum and mechanical root intrusion barrier. The dripper discharge rate of either 1.6 or 2.3 L/hr utilizes a combination turbulent flow, reduced pressure compensation cell mechanism and diaphragm to maintain uniform discharge rates. The drippers shall continuously clean themselves while in operation. The dripline shall be available in 0.3, 0.4 and 0.5m spacing between drippers unless otherwise specified.

*The Bioline tubing shall be Netafim Bioline 17 Model Number \_\_\_\_\_ or equivalent.*

## **UNI-TECHLINE 16 FITTINGS**

### **Description**

Uni-Techline 16 fittings shall be constructed in one of the following end configurations:

- Barbed insert fittings only (double barbed),
- Male pipe threads (MPT) with barbed insert fittings, or
- Female pipe threads (FPT) with barbed insert fittings.

### **Construction**

All fitting shall be constructed of molded plastic having a nominal outside dimension (O.D) OF 16 mm. Female and male threaded ends shall be capable of mating to standard PVC pipe threads with tapered threads.

### **Operation**

Uni-Techline connections shall be mated with Netafim Uni-Techline 16 tubing by pushing the tubing and twisting side to side until the tubing abuts to either adjoining tubing or a fitting stop. The Uni-Techline 16 fittings shall be Netafim double barbed fittings ONLY.

*The fittings shall be Netafim Uni-Techline fitting Model Number \_\_\_\_\_ or equivalent.*

## LINE FLUSHING VALVE

### Description

Line flushing Valves are used to reduce sediment build-up within the Techline tubing and to pass sediments or debris, which may have not been captured by the disc filter.

### Construction

The line-flushing valve shall be constructed of molded plastic with one of the following end configurations:

- ½ " MPT
- Insert barbed fitting

### Operation

The line-flushing valve shall operate at the beginning of the irrigation cycle as the system begins to pressurize, but before drip operation begins, and shall be capable of flushing approximately four litres of water at a minimum pressure of 100 kPa.

Note: Permanent damage could be sustained to the line-flushing valve where incoming pressures exceed 350kPa. Pressure regulations are recommended even with pressure compensating remote control valves, which tend to pause for a brief period of time before pressure compensation occurs.

Line flushing valves are to be installed in a valve box with a gravel sump to allow for periodic inspection and are to be installed with the dome portion of the flushing valve facing upward.

*The line Flushing Valve shall be Netafim Model Number \_\_\_\_\_ or equivalent.*

## **AIR/VACUUM RELIEF VALVE**

### **Description**

The air/vacuum relief valve serves two purposes:

1. To evacuate air from the Techline laterals during system start-up and,
2. To prevent a vacuum from occurring after the remote control valve has closed thus avoiding debris intrusion into the drippers at the higher locations in the zone.

### **Construction**

The air/vacuum relief valve shall be constructed of black or gray plastic with a ½" male pipe thread capable of mating with a threaded PVC reduction bushing.

### **Operation**

Design and installation techniques require that these valves be installed at the highest elevation in each zone (some zones may require more than one) in order to expel air and relief vacuum. In a zone where the highest elevation occurs between the intake and the exhaust headers (such as a mound or berm), an air/valve relief lateral shall interconnect the Techline dripper lines to avoid the necessity of installing one air relief valve on each Techline lateral.

Valves can be installed below grade in valve boxes to allow for periodic inspection.

*The air/vacuum relief valve shall be Netafim Model Number \_\_\_\_\_ or equivalent.*

## **PRESSURE REGULATION VALVE**

### **Description**

The purpose of the pressure regulator is to control downstream pressure at or below the specified system operating pressure.

Unregulated pressures in excess of the recommended operating ranges can diminish and disable line flushing valves or cause the integrity of the Uni-Techline fitting connection to diminish and / or fail.

### **Construction**

The pressure regulator shall be a Netafim spring-operated piston-type unit with an externally accessible regulation unit that can be serviced without removing the valve from the system. The body shall be molded of black plastic with a combination of male/female pipe threaded inlet and outlet. Removable and interchangeable springs shall be colour-coded to denote varying pressure ranges.

### **Operation**

The regulator shall have a built-in indicator that shows when it is operating. It shall be able to respond immediately to any inlet pressures variation. The regulator shall be capable of regulating from 100 to 350kPa.

*The pressure regulator valve shall be a Netafim Model Number \_\_\_\_\_ or equivalent.*

## **NETAFIM DRIPLINE STAKE AND INDICATOR FLAG**

### **Description**

The Netafim dripline stakes are used to hold dripline down to the soil surface. The stake shall be installed at 1-2 meter intervals. The Netafim indicator flags are used to indicate the operation of an irrigation zone. The flags are to be installed at the end of the laterals and are activated by pressure in the system to indicate operation.

### **Construction**

The stake and flag are constructed of molded plastic.

### **Operation**

The stakes are to be installed as per specification and flag operate within a pressure range of 100-350 kPa. The irrigation zones are to be protected from pressure fluctuations by installation of Netafim pressure regulation valves.

*The indicator flag shall be a Netafim indicator flag model number LIF or equivalent.*

## DISC FILTER

### Description

The purpose of the disc filter is to capture and retain water-transported debris or sediments that could reduce the efficiency of the Techline Drippers.

### Construction

The filter shall be a multiple disc filter with colour-coded filter elements indicating the size of the element being used. The disc shall be constructed of the chemical resistant thermoplastic for corrosion resistance.

The disc filter body shall be molded of black plastic with pipe threads for both inlet and outlet. A portion of the disc filter shall be capable of periodic servicing by unscrewing a threaded cap or unlatching the band. The ¾" model shall have an integral manual shut-off valve option.

### Operation

Typical installation of the disc filter shall be per the enclosed details or based on regional practices. Disc filters can be installed downstream of the remote control valve to allow for periodic servicing when the remote control valve is not operating. Alternatively, upstream of the remote control valve if the disc filter is specified with manual shut-off valve or when a line size ball valve is also specified to allow for periodic servicing with a pressurized main-line.

Recommended installation of disc filters shall be below grade positioned in a large enough valve box to remove the cap and internal disc element. A gravel sump in the bottom of the valve box is recommended to drain off water during periodic maintenance procedures. The filters can be installed above ground when security enclosures are provided.

*The filter shall be a Netafim Model Number \_\_\_\_\_ with a maximum flow of \_\_\_\_\_ L/min and a maximum pressure loss \_\_\_\_\_ kPa or equivalent.*

## **TECHFILTER**

### **Description**

The purpose of the disc filter is to capture and retain water-transported debris or sediments that could reduce the efficiency of the Techline Drippers and inject trifluralin into the system to prevent root intrusion.

### **Construction**

The filter shall be a multiple disc filter with colour-coded filter elements indicating the size of the element being used. The disc shall be constructed of the chemical resistant thermoplastic for corrosion resistance. The disc shall be impregnated with a low concentration of trifluralin to be transmitted throughout the system.

The disc filter body shall be molded of brown plastic with pipe threads for both inlet and outlet. A portion of the disc filter shall be capable of periodic servicing by unscrewing a threaded cap or unlatching the band.

### **Operation**

Typical installation of the disc filter shall be per the enclosed details or based on regional practices. The Techfilter cartridge will be changed every two years to replenish the trifluralin in the discs. Disc filters can be installed downstream of the remote control valve to allow for periodic servicing when the remote control valve is not operating. Alternatively, upstream of the remote control valve if the disc filter is specified with manual shut-off valve or when a line size ball valve is also specified to allow for periodic servicing with a pressurized main-line.

Recommended installation of disc filters shall be below grade positioned in a large enough valve box to remove the cap and internal disc element. A gravel sump in the bottom of the valve box is recommended to drain off water during periodic maintenance procedures. The filters can be installed above ground when security enclosures are provided.

*The techfilter shall be a Netafim Techfilter Model Number \_\_\_\_\_ or equivalent.*